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**BAY AREA
ECONOMIC
FORUM**

*A Partnership of the Association
of Bay Area Governments
and the Bay Area Council*



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BAY AREA ECONOMIC FORUM

A Partnership of the Association
of Bay Area Governments
and the Bay Area Council

The Bay Area Economic Forum was formed in 1988 to bring a regional perspective to economic issues facing the Bay Area. Through the Forum, leaders in government, business, labor and higher education join forces to develop and implement policies that promote the long-term economic vitality of the Bay Area.

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ECONOMIC GROUP SALUTES MTC'S AIR QUALITY RECOMMENDATIONS; URGES MORE MARKET-BASED MEASURES

SAN FRANCISCO--The Bay Area Economic Forum today praised the Metropolitan Transportation Commission for endorsing a number of the transportation control measures recommended in the Forum's report, "Market-Based Solutions to the Transportation Crisis." MTC adopted several of the Forum's recommendations in its Draft Plan for Transportation Control Measures for the Bay Area, released June 8. The Forum also urged MTC to adopt additional market-based measures as part of its plan to reduce vehicle emissions in the Bay Area to comply with State air quality standards.

In a related development, the Forum today released for distribution the printed edition of "Market-Based Solutions to the Transportation Crisis." The Forum had previously issued a preliminary version of the report in February.

Citing MTC's conclusion that "Market-based strategies may be the only significant opportunity--after technology--to achieve air quality standards mandated by the California Clean Air Act," Forum Executive Director Mike McGill said, "We are pleased that MTC recognizes that the Forum's recommendations offer the best hope of complying with the State's stringent air quality standards."

"However," continued McGill, "MTC has not taken full advantage of the opportunity afforded by the market-based approach. Even by its own estimates, MTC's most aggressive Integrated Package of transportation control measures--including major improvements in public

-MORE-

transit and a much tougher vehicle inspection system--will yield only a net reduction of 13.6% in vehicle emissions. That is far short of the 35% emissions reduction required by 1997 under the 1988 California Clean Air Act. At the same time, MTC estimates that the Forum's package of market-based measures would yield an additional 16.7% reduction, making this the only approach with a realistic chance of reaching the required targets.

"The Forum urges MTC to give special attention to developing the ideas of a 'smog fee,' based on total mileage driven and how 'dirty' the particular vehicle is, and peak-hour tolls for the most congested segments of Bay Area roads. Such measures are potentially the most effective in cutting down vehicle emissions, because they target the most polluting vehicles and most damaging travel behavior. They also affect non-commute vehicle trips, which account for about 80% of the total trips in the region.

"The market-based approach is not only more effective than other options, it is also more fair. It applies equally to all drivers based on their actual behavior. And a market-based system would generate revenues to improve transit options and to offset any hardship to low-income drivers.

"The MTC has placed our recommendations on the table as serious contenders for inclusion in the Bay Area's air quality plan. MTC's Draft Plan demonstrates that there are really no effective alternatives to a market-based approach. We will work closely with MTC and the Bay Area Air Quality Management District to see that market-based solutions are a major component of the region's ultimate air quality plan," McGill concluded.

The Forum's report, "Market-Based Solutions to the Transportation Crisis," calls for the use of pricing mechanisms and economic incentives to reduce traffic congestion and comply with California's tough new air quality standards. The report contains specific recommendations--including congestion tolls, smog fees, and employee transportation allowances--to reduce vehicle emissions and vehicle miles driven in the Bay Area.

Organized in 1988 to maintain and enhance the economic vitality of the region, the Bay Area Economic Forum is a public/private partnership composed of top business executives, elected officials, and academic leaders from throughout the nine-county Bay Area. The Forum is jointly sponsored by the Association of Bay Area Governments and the Bay Area Council.

Market-Based Solutions to the Transportation Crisis

Executive Summary

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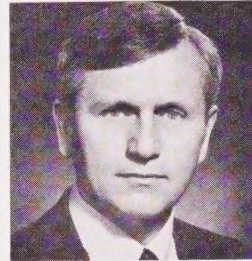
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Message from the Chairman

We need to challenge the conventional wisdom about how we should improve our air quality and reduce traffic congestion. Too often, our policies attempt to solve problems by regulating behavior. *Market-Based Solutions to the Transportation Crisis*, a two-part report summarized here, presents a new approach.



The Bay Area Economic Forum believes that the most efficient and least disruptive means of solving many problems in our society is to adopt a pricing mechanism that accurately reflects the true cost of each individual's options. This approach allows people to make individual choices, but signals clearly the cost and consequences of the choices they make. These signals will encourage behavior that is in the best overall interest of our community.

Such an approach can be applied to many issues; in this report, we use it to address our region's air pollution problem. The 1988 California Clean Air Act requires the Bay Area to adopt transportation management strategies to achieve mandatory air quality standards. The Forum believes — and this report demonstrates — that the best way to achieve this goal is by means of a pricing system that reflects the cost to society of the decisions each of us makes regarding how and when we travel.

The Forum is uniquely positioned to make this proposal. As a public/private partnership, we bring together elected officials, academic leaders, and business executives to encourage a constructive dialogue about the problems facing our region's economy. Out of this dialogue come the kind of enlightened, far-sighted, practical policy recommendations this report contains.

We urge you to read this report, to think about it and to communicate with your elected officials. Let them know how you want to clean up the air and reduce traffic congestion.

A handwritten signature in cursive script that reads "Robert T. Parry". The signature is written in dark ink and is positioned above the printed name and title.

Robert T. Parry
Chairman
Bay Area Economic Forum

President & CEO
Federal Reserve Bank
of San Francisco

How Can We Solve Our Region's Transportation Crisis?

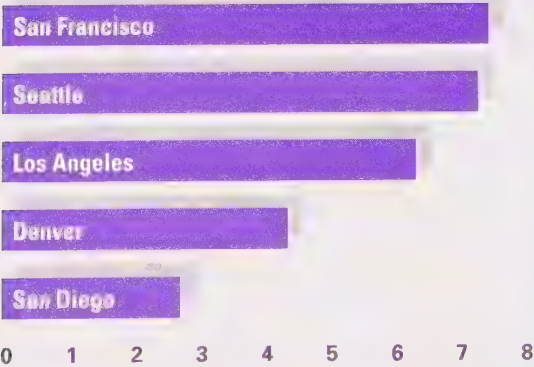
We must respond to our region's transportation crisis. Deadlines for formulating that response are upon us. Public discontent with traffic congestion and state mandates to improve air quality require immediate action. Unless a better approach is offered, measures could be adopted that harm the Bay Area economy and way of life. The Bay Area Economic Forum recommends an approach that offers the prospect of relief from congestion and compliance with air pollution standards, while preserving our quality of life -- an approach that uses the market principles that work so well in other areas of our economy.

The market-based approach refocuses our system for financing transportation on those who use it. It asks users, not the general public, to pay for transportation services. And it makes sure that users enjoy the benefits of the fees they pay.

New air pollution laws are forcing the Bay Area to adopt a drastic plan to cut vehicle emissions. Highly restrictive regulatory measures are now under serious consideration: banning driving on alternate days, gas rationing, vehicle rationing, and no-driving zones in cities. Such measures could have a severe impact on the region's economy and on personal freedom and flexibility.

The approach offered here will reduce congestion and pollution with the least disruption of our community. Unlike the alternatives, this approach is fair to low-income citizens. Unlike the alternatives, this approach will work.

The Bay Area is the Most Congested Region in the West



Congestion Severity Index, ratio of total hours of delay to million vehicle-miles of travel.
Source: ITE Journal, 1987

Severe congestion is eroding our valued lifestyle and weakening our economy.

Why This Report? Why Now?

To meet stringent state air quality standards mandated by the 1988 California Clean Air Act, the Bay Area must adopt "transportation control measures" (TCMs) to reduce traffic congestion. These TCMs will become part of the Regional Air Quality Plan (due June 1990), which aims to cut vehicle emissions by 35% in 1997.

This ambitious reduction will require extraordinary, perhaps painful, changes. Any effective program to comply with the law will be unpopular at first -- until the public and policy-makers begin to view it as the best among difficult choices.

The Bay Area Economic Forum has targeted the transportation issue as a critical regional problem. Clean air and economic vitality are not mutually exclusive goals. On the contrary, improved air quality will enhance the region's economy, if appropriate policies are adopted. The challenge is to identify and adopt workable remedies.

How Bad Is the Problem?

Our failure to solve transportation problems is costing us nearly \$2 billion annually. Part of this cost is the value of time lost in congestion. Bay Area residents are delayed in traffic nearly 100 million hours each year, and congestion levels have risen 25% in just three years.

There are also costs exacted by air pollution. Automotive emissions are the largest contributor to air quality problems in the Bay Area. These emissions exact a cost in the form of damage to health, property, and our natural environment.

Our transportation problems are reshaping the region. Jobs are dispersing partly because of the congested state of transportation facilities. Companies are moving to outlying areas, or leaving the region, to get access to the labor they need.

The key element in the transportation crisis is the failure of public policy to keep pace with, and manage, growth in transportation demand. Existing facilities are not used efficiently; funding systems have broken down; and transit agencies are finding it increasingly difficult to fund their operations out of public sources.

The Forum believes it is time for a bold new approach: a market-based approach.

What Is a Market-Based Approach?

The concept behind this approach is a simple one: only users should pay for the cost imposed by their choice to use the system. Specifically, drivers using heavily-polluting vehicles on congested roads at peak periods should pay fees that reflect the costs of the congestion and the pollution they impose.

The market-based approach relies mainly on a system of fees linked to vehicle emission levels. These fees alert individuals to the pollution costs they are imposing, thereby encouraging them to choose the most economical and socially beneficial means of travel.

Under a market-based system, users would retain the ability to choose among various options based on the cost of each alternative. In contrast, under the regulatory approaches offered elsewhere, individuals would have choices made for them.

How Would It Be Applied?

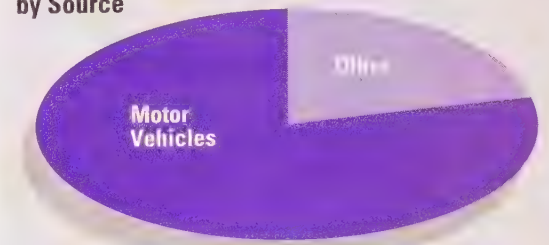
In reviewing specific proposals for reducing automobile-generated air pollution in our region, the Forum assessed five aspects of each alternative:

- impact on air quality
- impact on the regional economy
- impact on mobility
- feasibility
- acceptability

The Forum supports measures which directly reduce pollution -- charging an annual "smog fee" based on the actual emissions of each car, and implementing an enhanced vehicle inspection and maintenance program.

The advantage of emissions fees and inspection is twofold. First, they impose a fee based on a careful assessment of the public cost imposed by individual choice. Thus, if a car has particularly dirty

Bay Area Emissions of Carbon Monoxide by Source



Source: Air Quality Planning in the Bay Area: 1988 Status Report, MTC, ABAG and BAAQMD, 1988

Because vehicle emissions are the largest source of pollutants, auto use must be drastically reduced to comply with state clean air standards.

emissions, the owner will be charged accordingly for the disproportionate impact he or she has on air pollution in the region. Second, a massive bureaucracy need not be created to implement these measures.

The Forum supports a number of other market-based measures which should benefit the region's air quality by reducing overall vehicle-miles traveled and congestion. These include highway user fees, particularly during peak-hour commute periods; raising the gasoline tax; establishing a regional network of high-occupancy-vehicle (HOV) lanes; and initiating employer-based financial incentives, such as employee travel allowances and elimination of free parking.

These indirect measures recommended by the Forum are part of a broader strategy to reduce traffic congestion.

The cost of providing highways is proportional to peak hour use. So why not charge more to use the roads at peak periods?

What it Really Costs to Use Bay Area Freeways (cents per vehicle mile)



Source: Keeler and Small, Journal of Political Economy, 1977; updated by BAEF

Institution of peak-period highway user fees, for example, reflects the relatively high costs of this type of travel. These fees will encourage behavior that costs less, such as carpooling, riding public transit, or delaying or eliminating unnecessary trips during the peak period. Additionally, having employers charge for employee parking will provide a financial incentive for workers to select alternatives to driving alone, which will lessen both congestion and pollution.

In the absence of direct fees, raising gas taxes is a way to levy an emissions fee since emissions are linked to the amount of gas burned.

A critical component of this approach is that fees would be used only to fund transportation improvements in the traffic corridor in which they were collected. That way, users can see the benefits of the fees, through such improvements as carpool lanes, public transit and park-and-ride lots.

Is This Approach Fair?

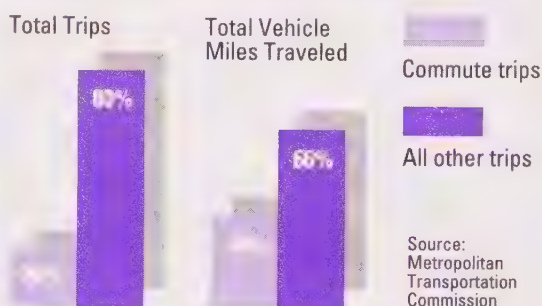
A market-based approach is inherently more fair than regulatory alternatives, since it applies equally to all drivers based on their actual behavior. It does not seek to single out one group (as do, for example, regulatory measures aimed strictly at those who work for large employers). Nor does it place the choice of how people are to behave in the hands of governmental agencies. Rather, it leaves each of us the freedom to choose how, when and where we travel. But we have to take into account the price for each option based on the public costs it imposes.

It has been argued, however, that not all drivers are equal. The market-based approach might discriminate against the poor, since they are least able to afford the higher fees imposed. This argument is wrong.

The Forum's market-based measures provide revenue to finance low-cost travel alternatives. This enables people to choose carpools and transit in order to save money. Such funding can also be used to offset any impact on the poor through tax credits or direct financial assistance to bring vehicles up to code.

In contrast, regulatory mechanisms would not generate revenue, and would require a larger government bureaucracy, for which everyone pays regardless of whether they drive or pollute. No funds are left to finance more socially beneficial transportation alternatives.

Commute vs. Non-Commute Driving



Commute travel constitutes only 20% of total trips. Any comprehensive TCM plan needs to address both commute and non-commute driving.

Market-based measures also apply to all driving, not only home-to-work commute as some proposals do. Commuting makes up only 20% of total trips traveled and 34% of miles traveled. An even smaller proportion of total trips are taken by employees of large employers. Thus, to single out commuters, or commuters who work for large employers, as the target group to reduce air pollution is unfair and ineffective.

How About Transit?

These proposals are not intended to force travelers into using public transit. If the full costs of driving are assessed, however, transit will be a much more attractive alternative than it is today. Bus transit service in particular can be added relatively quickly. As congestion is relieved, especially on HOV lanes, service quality of bus transit will rise. As transit is used more intensively, additional routes and point-to-point service become more economical. With implementation of market-based pricing, transit will become a speedier, more convenient, and more cost-effective way to travel.

Will it Work in the Bay Area?

The market-oriented approach – smog fees, highway user fees, and corridor-specific transportation improvements – gives individuals a strong motivation to reduce air-polluting and traffic-congesting behavior through clear price signals. It preserves freedom of choice to a greater degree than regulatory methods, and makes the driver/polluter pay in relation to the burden placed upon the system.

Relatively little bureaucracy is needed to maintain the market-based system, because positive changes are the consequence of millions of choices made by individuals every day. When individuals make a transportation choice that is beneficial to the community, they are rewarded, in terms of money or convenience; when they make a choice detrimental to the community, they pay. The main results are: (1) polluting and traffic-congesting behavior is reduced substantially; and (2) revenues are generated to improve transportation options and to ease any undue impacts on those least able to afford them.

The market choice is the right choice for the Bay Area. The Bay Area Economic Forum urges the region's political leaders to choose this path and make the Bay Area a model for other regions around the nation.

The Forum Recommends:

Market-based approaches which establish financial incentives for less-polluting and less-congesting driving practices.

Primary measures will immediately and directly reduce pollution, while secondary measures will indirectly reduce pollution by reducing driving and traffic congestion. Most of these measures will generate revenue to fund transportation improvements, and can also be used to offset costs for low-income drivers.

Primary Measures

Smog Fee: Charge fees based on actual emissions level of vehicles, proportional to miles driven.

Enhanced Vehicle Inspection Program: Require more frequent inspection with higher ceiling on cost to bring vehicles up to standard.

Secondary Measures

Tolls on Bridges & Highways: Charge new or higher tolls on bridges, new highways, and congested sections of existing highways -- particularly at peak periods.

Employee Incentives: Institute travel allowances for employees instead of free parking, as an incentive to use options to driving alone.

High-Occupancy-Vehicle (HOV) Lane Network: Create a regionwide network of HOV lanes to offer commuters a time- and cost-saving alternative to driving alone.

Gas Tax Increase: Raise the gasoline tax significantly to finance transportation improvements and improve options to driving alone.

The Forum Does *Not* Recommend:

Driving restrictions or capacity restrictions which would seek to ration road space, vehicle ownership, and vehicle use, or halt construction of road improvements.

The Forum believes such an arbitrary regulatory approach would be expensive, ineffective, and would threaten the region's economy. Also, such measures would not generate any revenue to fund improvements, as Forum measures would.

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Federal Reserve Bank
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Bay Area Council
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Forum Staff: **Michael S. McGill**
Executive Director
Sally DiDomenico
Assistant Director

This Executive Summary, produced by the Bay Area Economic Forum, introduces a two-part report on *Market-Based Solutions to the Transportation Crisis*. For copies of the full report, or additional copies of this summary, call or write the Forum.

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Market-Based Solutions to the Transportation Crisis:

The Concept



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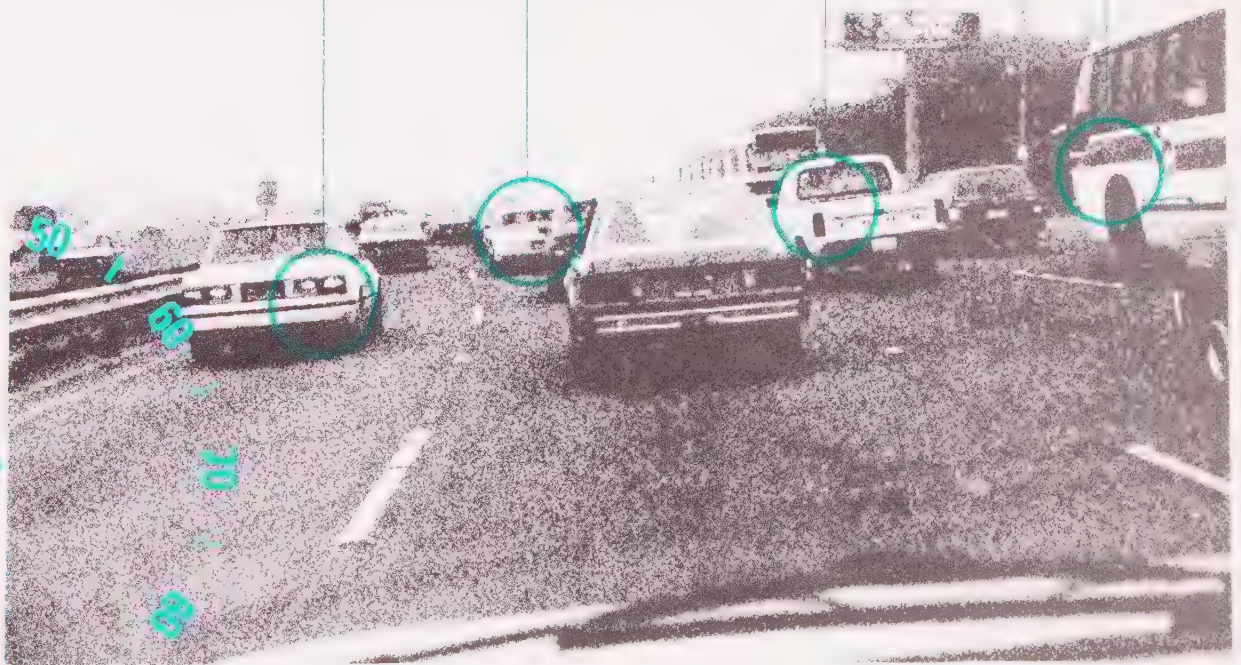
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*Car Pools:
Save time, no tolls*

*Public Transportation
...
Better Service*

*Dirty Exhaust:
Pay smog fee*

*Drive Alone
Increased toll*



Bay Area Economic Forum

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Its members are committed to actions fulfilling the economic potential of the region while maintaining its unique and precious quality of life.

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<i>Transportation Task Force Chairman:</i>	Hon. Tom Nolan Supervisor San Mateo County

This report is one of a two-part report on *Market-Based Solutions to the Transportation Crisis*, published by the Bay Area Economic Forum. For additional copies, call 415/981-6600, or send requests to 847 Sansome Street, San Francisco, CA, 94111.

Message from the Chairman

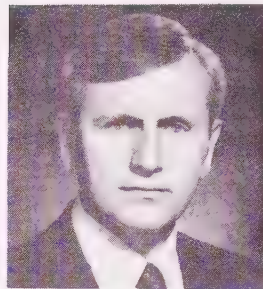
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The Bay Area Economic Forum believes that the most efficient and least disruptive means of solving many problems in our society is to adopt a pricing mechanism that accurately reflects the true cost of each individual's options. This approach allows people to make individual choices, but signals clearly the cost and consequences of the choices they make. These signals will encourage behavior that is in the best overall interest of our community.

Such an approach can be applied to many issues; in this report, we use it to address our region's air pollution problem. The 1988 California Clean Air Act requires the Bay Area to adopt transportation management strategies to achieve mandatory air quality standards. In this and a companion report, the Forum demonstrates that the most effective means for achieving this goal is through a pricing system for transportation services that reflects the cost to society of our decisions regarding how and when we travel in our region.

The Forum is uniquely positioned to make this proposal. As a public/private partnership, we bring together elected officials, academic leaders, and business executives to encourage a constructive dialogue about the problems facing our region's economy. Out of this dialogue come the kind of enlightened, far-sighted, practical policy recommendations this report contains.

We urge you to read this report, to think about it and to communicate with your elected officials. Let them know how you want to clean up the air and reduce traffic congestion.



A handwritten signature in blue ink that reads "Robert T. Parry". The signature is fluid and cursive, with a long, sweeping underline.

Robert T. Parry
President & CEO
Federal Reserve Bank
of San Francisco

Our failure to solve transportation problems is costing us nearly \$2 billion annually.

Summary

We must respond to our region's transportation problems. And the deadlines for formulating that response are upon us. Public discontent and state mandates to improve air quality require immediate action. Unless a better approach is offered, measures may be adopted that would harm the Bay Area economy and way of life. This report presents an approach that offers the prospect of relief from congestion, and compliance with air pollution standards.

The approach refocuses our system for financing transportation on those that use it. It asks users, not the general public, to pay for transportation services. And it makes sure that users enjoy the benefits of the fees they pay. These are the same market principles used throughout our economy. And, unlike the harsh regulatory proposals under consideration by others, this proposal will leave our valued freedom of choice intact.

The approach offered here will reduce congestion and pollution with the least disruption of our community. Unlike the alternatives, this approach is fair to low-income citizens. Unlike the alternatives, this approach will work.

The Crisis

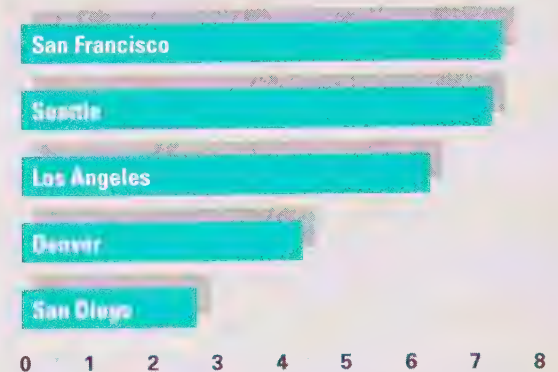
Our failure to solve our transportation problems is costing us nearly \$2 billion annually. Part of this cost is the value of time lost in congestion. Bay Area residents are delayed in traffic nearly 100 million hours each year, and congestion levels have risen 25% in just three years.

There are also the costs exacted by air pollution. Automotive emissions are the largest contributor to the two main air quality problems in the Bay Area, ozone and carbon monoxide. These emissions exact a cost in the form of damage to health, property, and our natural environment.

Our transportation problems also are reshaping the region. Economic activity in the region is dispersing partly because of the congested state of our transportation facilities. Companies are moving to outlying areas, or leaving the region, to get access to the labor they need.

The key element in the transportation crisis is the failure of public policy to keep pace with, and manage, growth in transportation demand. Existing facilities are not used efficiently, funding systems have broken down and transit agencies are finding it increasingly difficult to fund their operations out of public sources.

The Bay Area is the Most Congested Region in the West



Congestion Severity Index, ratio of total hours of delay to million vehicle-miles of travel.

Source: ITE Journal, 1987

The Market Approach

A new approach is needed. The approach recommended here brings to transportation the same set of incentives and rules used in the rest of the economy. There are three key elements to the market approach:

Users should pay the costs they impose. No more, no less. The use of cost-based fees to finance transportation provides not only a financing mechanism, but also is an automatic regulator of demand for transportation services.

Highway user fees would vary depending upon the type of facility and the level of congestion. The most costly highway facilities would be those serving peak-period travel in the core areas of our region.

Air pollution, too, is a cost imposed by a motor-vehicle user. The quantity of pollution emitted by a vehicle also would be priced, and billed as a separate fee.

Fees should be linked to specific corridor improvements. Users will see the benefits of the fees they pay.

Choices about which transportation improvements to make should be based on sound, cost-benefit analysis of the alternatives. Decisions about transportation improvements must be de-politicized.

Implementation of this approach would reduce congestion, stimulate enhanced transit service, improve air quality and reduce the need for special taxes or subsidies.

The market approach puts the responsibility for financing the transportation system on those who use it.

A Solution that Works

The solution proposed here is not new, and it is not radical. It is the time-tested means of financing most business activity and services in our economy. Until recently, transportation was financed this way, too.

Implementation

Implementation of a user-oriented system of finance would be simple. We can be as high- or low-tech as we wish. A high-tech approach would be to equip cars with transponders that can be read by electronic sensors in the roadway, and the user would be billed later for his share of the costs. A low-tech approach would ask drivers to display a special notice that they purchase if they wish to buy highway services at the most congested times.

The Effects

Peak system users would experience higher (perhaps considerably higher) out-of-pocket charges than today. In return, however, they will enjoy travel time reduction, which has monetary value, as congestion is reduced on roadways. And the revenues would be used exclusively to fund transportation projects and services for the same corridor in which they were collected.

Bus transit and its users would benefit in the form of improved travel times and improvements in transit service. The result would be enhanced demand for transit, with better coverage.

Pollution would be reduced sharply. The emissions fee would encourage users and automobile manufacturers to find ways to reduce emissions.

Proven and Fair

Metropolitan areas around the world are beginning to establish such systems. Those experiences confirm the predicted effects on congestion, travel time and choice of travel mode. Norway and Singapore have both implemented a user fee system for transportation finance which has drastically reduced congestion.

The market approach also is a fundamentally fair approach. It puts the responsibility for financing transportation on those who use it. Contrary to a common misperception, this does not mean that the market approach is burdensome on low-income groups. On the contrary, the market approach is likely to be fairer than either the current approach or proposed regulatory approaches. Unlike other approaches, user fees generate revenue which can be used to support transit or fund

special rebate or subsidy programs, thus offsetting any potential hardships.

The Regulatory Alternative

Compliance with regulations (such as alternative driving days, or bans on car ownership) can impose huge costs on residents and employers alike. Los Angeles has chosen the regulatory approach, and is feeling its ill effects with little improvement in air quality.

Regulatory approaches in general are more costly than approaches that change economic incentives. Regulations do not generate revenue to solve service or fairness problems; indeed, regulations usually require new taxes to be implemented.

Will it Work in the Bay Area?

The characteristics of the Bay Area make economic solutions even more promising than they would be in other areas of the country. There are no technological barriers to implementing user fees; and favorable geography makes our region an ideal setting for an economic approach to transportation financing.

The Bay Area also has the advantage of a well-developed and diverse transportation infrastructure. This system is key to a quick response to the incentives created by a user fee-based financing system.

Bay Area residents have chosen to live here because of the high quality of regional lifestyles and environment. The economic approach, by reducing congestion and improving air quality, would help preserve these values.

There is considerable evidence of public support for an economic approach. Public satisfaction with user fee systems can be seen in areas that have implemented them, such as Singapore and Norway.

Bay Area voters, too, have shown that they are willing to pay higher fees for transportation if the fee revenues are used productively to their benefit. That is precisely the guiding principle of the market approach.

The Challenge

The challenge of persuading the public is not insurmountable. Bay Area residents would be receptive to an approach that promised cost effective relief from our transportation problems.

The choice is ours: to deepen the crisis, or use a productive approach that alleviates the crisis.

The transportation crisis is eroding our valued lifestyle and weakening our economy.

The Crisis at Hand

The transportation problems of the Bay Area have reached crisis proportions. Congestion levels have grown 25% in only three years, giving San Francisco the highest Congestion Severity Index of any region in the West.

At these rates, by the year 2000, virtually every major artery in the Bay Area highway system will be at the worst "Level of Service" rating used by engineers.

The transportation crisis is eroding our valued lifestyle and weakening our economy. Time previously spent in leisure or work is now spent in a grinding commute.

The current financing mechanisms largely ignore the underlying economics of our problems. This report recommends that the mechanism of financing transportation use market-based pricing and investment principles.

The Grim Statistics

The biggest single dimension of the transportation crisis is the penalty exacted by congested and deteriorated highway facilities.

Bay Area residents spend nearly 100 million hours in delay on congested highway facilities each year. This has an economic value of about \$1.3 billion at current wage levels. On top of this, congested and undermaintained facilities impose a burden in additional operating costs. Caltrans estimates these costs at nearly \$400 million per year for our region.

And the level of congestion is rising. Between 1985 and 1988, Caltrans estimates that the level of congestion increased by 25% in the Bay Area. They estimate that it will increase another 150% by 1995, and an additional 65% between 1995 and 2005.

By the year 2000, virtually every main artery in the region – Highways 80, 880, 101, 680, 237, 84 and 4 – will be operating at Level of Service E or F, what engineers consider "intolerable" delays.

Pollution Costs

Pollution costs related to automotive emissions are another cost of the transportation crisis. Automotive emissions are the largest contributor to the two main air quality problems in the Bay Area, ozone and carbon monoxide.

Although the Bay Area pollution problem has enjoyed some improvement over the past few years, the trends have turned ominous. Vehicle miles are growing more rapidly than the trend in the use of

Bay Area Emissions of Carbon Dioxide by Source



Source: Air Quality Planning in the Bay Area: 1988 Status Report, MTC, ABAG and BAAQMD, 1988

clean vehicles; and stop-and-go conditions produce several times more pollutants per mile than do smoothly flowing cars.

A conservative estimate of the economic cost of vehicular pollution is about 1.5 cents per vehicle mile. This amounts to losses in the Bay Area of at least \$300 million per year, in the form of damage to health, property, and plant life.

Transit Not Working

The Bay Area has made significant investments in regional rail systems, and in commuter bus and local bus transit systems. The systems are generally well-managed and well-equipped.

Despite this effort, the share of trips by transit has shown a downward trend. Whereas private automobile ownership and use has grown rapidly, transit use has shown an average rate of decline of almost 2 percent per year.

Presently, less than 12 percent of total tripmaking in the Bay Area is via transit. The low utilization of transit is particularly acute in the South Bay and east Contra Costa County.

Gloomy Land-Use Trends

It is hard to find any glimmer of hope in the trends of land use in the Bay Area. The movement of people and jobs outside of the core areas virtually guarantees heavier driving, congestion and air pollution.

Not only are the core areas losing old jobs to outlying areas, but new jobs are increasingly locating there. The central Contra Costa/Livermore Valley area, for example, is projected to have 58 million square feet of office space by the year 2000 – about what downtown San Francisco has now.

Our transportation policies have not kept pace with, or properly managed, growth in transportation demand.

Such dispersed activity involves a substantial burden on existing transportation facilities. Trip lengths to suburban employment clusters in the Bay Area are two to three times longer than the average. And they are hard to serve by existing transit service. Less than four percent, for example, of the workers at offices around Walnut Creek's BART stations use BART to get there.

What is Happening?

Part of the explanation of these trends, of course, lies in the recent demography and economics of our region. *In the past 20 years, the population in the Bay Area has grown by over 50% – to nearly six million.*

Incomes in the area also have risen, spurred by the vigor of our industries and our workers. Between 1960 and today, the inflation-adjusted incomes of households in the Bay Area have more than doubled.

These developments by themselves would have caused some increase in the desire to travel, own automobiles, and seek a better standard of living in new residential communities. Indeed, growth in vehicle miles traveled since 1960 exceeded even the 230% increase in automobile ownership.

A Failure of Public Policy

But the key element in the transportation crisis is not the region's success in attracting its population and employers. Our transportation policies simply have not kept pace with, or properly managed, growth in transportation demand.

The Bay Area is not inherently doomed to overcrowding and congestion. Indeed, average residential densities in the Bay Area are not high by national and international standards for urban areas. And we put in place, in the 1960s and 1970s, an extensive urban roadway system that has the potential to serve our transportation needs. Our failure has been the management of this transportation system.

The imbalances caused by that mismanagement are everywhere. Not only in the phenomenon of congestion itself, but in unbalanced patterns of use and funding:

- *Existing facilities are not used efficiently. Fully 75 percent of those not using transit drive alone.* The road space used by one lone driver could, potentially, support high-occupancy transportation service for 20 people;
- *Funding systems have broken down.* The Metropolitan Transportation Commission (MTC) estimates that the total need for local streets and

road maintenance is currently \$430 million but the annual shortage of funds is \$170 million;

- *There is a \$4.5 billion shortfall for Caltrans' 1989 State Traffic Improvement Plan.* The underfunding affects operation, maintenance and rehabilitation, safety improvements, capacity enhancements and new facilities;
- *Fiscal trends are particularly ominous for transit agencies.* They are finding it increasingly difficult to fund their operations out of public sources, and have resorted to fare increases. Transit patrons react negatively to fare increases, however; area transit systems are on the brink of a death spiral of higher fares, lower patronage, lower revenue, and service cutbacks.

Reactive Transportation Policy

The response by citizens to this failure of public policy is to take matters into their own hands:

- Lawsuits are pending which would halt new freeway construction to force compliance with Clean Air standards;
- Cities like Walnut Creek have halted commercial development until congestion problems are solved. Other cities, like Pleasanton, have imposed restrictions on ways employees may get to work;
- The cities of Burlingame and Menlo Park routinely ask employers to give hiring preference to local residents as part of the permit and EIR approval process;
- Voters in Alameda, Contra Costa, San Mateo, San Francisco and Santa Clara Counties passed ordinances to use sales tax revenues for transportation purposes. Funding of transportation is now linked, in a regressive way, to the amount spent on clothing and other goods, rather than the dimension of transportation problems.

A New Approach is Needed

These are but the leading edge of what may be far more draconian measures. Despite the gloom, and despite the dimensions of the transportation crisis, there is something that can be done.

The solutions lie in an approach that brings to transportation the same set of incentives and rules used in the rest of the economy. It is an approach that relies on sound economic principles.

Greater reliance on user fees would regulate demand and provide revenue for specific transportation improvements.

The Market Approach

The transportation problems of the Bay Area are essentially economic problems, with economic solutions. Current policy has failed because it does not address the underlying economics of our transportation crisis.

In contrast to present policy, there should be greater reliance on user fees to regulate demand and to provide the revenue for specific transportation improvements.

Coupled with the use of more business-like investment criteria, such a policy would minimize the total public and private cost of providing transportation services.

If the Bay Area adopted such a policy, the benefits to the region would be many:

- Lower total transportation cost to the region as a whole.
- Less congestion.
- Improved transit services.
- Cleaner air.
- Less need for special taxes or subsidies.

Perhaps most importantly, the entire regional economy will benefit from sounder transportation policy. The availability of low-cost transportation and a clean, uncongested environment will enhance the region's quality of life, and its competitiveness as a place to live and do business.

The Case for the Market Approach

Transportation problems are, at their essence, economic problems. They are problems of managing limited resources – people's time, clean air, and needed funds to build and maintain transportation facilities.

Elsewhere in the economy, finite resources are managed by a system of price signals and investment rules. Prices let users know how much of available resources they are using, and encourage economy. Investment rules ensure that resources are not used wastefully in new projects.

Most importantly, the financial resources to resolve these problems have dwindled. It costs upwards of \$40,000 to add enough additional highway capacity for one additional commuter. Much of the solution clearly is going to have to lie in better management of existing facilities, rather than increasing capacity by constructing more facilities.

Adoption of sound economic principles in transportation policy would help us better use our existing facilities in addition to financing improvements. It would reverse the adverse trends in congestion and delay.

In the process, the attractiveness of the region as a place to live and do business would be enhanced. This, in turn, would enhance the economic competitiveness of the Bay Area.

Adoption of the market approach also ensures that citizens retain freedom of choice in their transportation decisions. The choice of when, where, and how to travel remains with the consumer.

The Basic Elements

There are three basic changes that need to be made in our public policy toward transportation:

- Cost-based user fees;
- Linking of fee revenues to specific transportation needs;
- Cost-benefit analysis of public transportation projects.

These are not separate policy changes, but rather the basic elements of a single solution to the region's transportation problems.

Cost-based User Fees

The first step in making better use of our transportation facilities is making sure that users have an incentive to travel economically. The best way to create that incentive is to apply a user fee that reflects the actual costs imposed by the driver.

As users incur these fees, they will automatically make decisions which respond to community concerns; they will make use of the facility only if their personal gain exceeds the costs they impose on the rest of the community. User fees deter low-priority tripmaking, leaving the facility available for high-priority travel.

The current system of highway finance does impose some user fees. The gasoline tax, for example, effectively charges users around 1 cent per mile traveled by the average passenger car. Unfortunately, however, this user fee does not come close to capturing accurately the true costs imposed by drivers, particularly during peak times, on expensive facilities near cities.

Revenues collected from user fees should be dedicated to serving the needs of the affected travelers in that same corridor.

Highway user fees need to better reflect the cost of using roadways.

- Roadway costs vary widely by location. In California, it costs about 4 times as much per lane mile to build a highway in the center of an urban area as in an outlying location.
- A major cost imposed by a traveler is the delay he imposes on other travelers. When a road is congested, one additional vehicle can slow other travel appreciably; during highly congested commute trips, for example, one more auto can add an hour or more, in the aggregate, to the travel times of other commuters. One more truck can add two to five hours to congestion delay on the roadway.
- Costs imposed by users vary sharply with the level of traffic. Costs are 10 to 20 times higher during the peak commute than during off-peak hours.
- Pollution costs also are not accounted for in the present system. Each vehicle mile traveled by a passenger car imposes emissions-related costs in the Bay Area of about 1.5 cents.

Because the user does not pay the full costs, he has no way of knowing the costs his decisions impose. Without proper pricing, very important decisions will be made that may adversely affect the region – about where to live, when to travel, and whether to use transit or a private vehicle.

Link User Fees to Improvements in Facilities

The second key element is to link user fees and new investments in transportation improvements. Fees are necessary not only to signal appropriate levels of use, but also to guide transportation investment. The link between user fees and investment is seen every day in the private market. A shopping center

owner, for example, adds additional floor space if the rent collected from those tenants will be enough to pay for the investment. An airline adds another aircraft to a particular route if fares will support it.

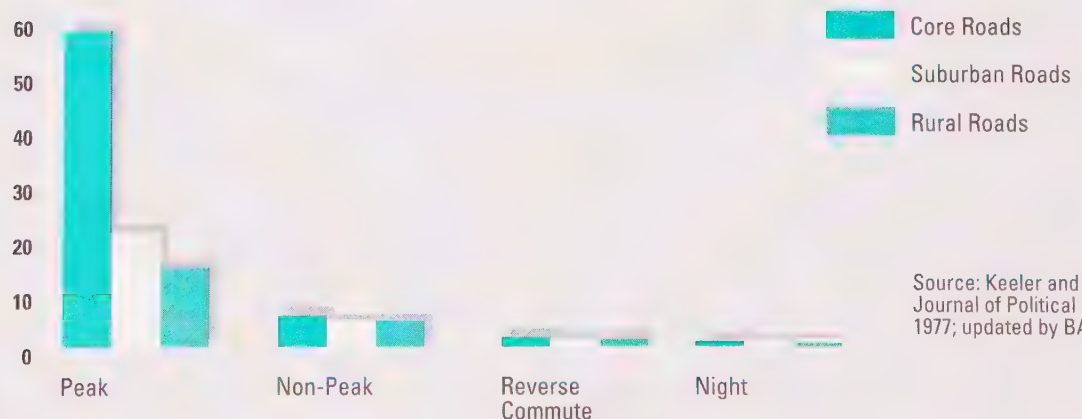
And in the private market one customer is not charged more in order to subsidize another. For example, the telephone company does not subsidize costly daytime business telephone use with revenues from off-hours users; on the contrary, the fees simply are higher for the more costly use.

Public policy should apply the same rules in the highway and transit arena. If a new transportation facility can save users more in travel time and congestion delay than it costs, the investment should be made. If user fees were charged that reflected the costs of congestion, then a simple investment rule emerges: when the user fees rise above the cost (per user) of expanding transportation service for those users, then additional transportation capacity should be added.

This pricing and investment policy should be on a corridor-by-corridor basis to the extent practical, to avoid cross-subsidization. Revenues collected from user fees should be dedicated to serving the needs of the affected travelers in that same corridor.

Without a proper user fee policy, it is not possible to implement a sound investment policy. By way of analogy, imagine that tickets to a basketball game were being given away. The number of fans that would show up for the game would be larger than the capacity of the arena. But we would be foolish to use that fact as a guide in designing the size of the arena! Only if the fans were willing to pay the cost of their seats and the arena still was over capacity could we say that more seats really were needed.

What it Really Costs to Use Bay Area Freeways (cents per vehicle mile)



Source: Keeler and Small, Journal of Political Economy, 1977; updated by BAEF

Without the adoption of the basic elements of the market approach, the Bay Area can expect further decline in the quality of transportation services.

The current system of highway pricing and finance, however, suffers from exactly these problems. Investment decisions are distorted by the failure to properly price highways. In addition, the revenues from current "user fees" are not generated or dedicated on a corridor-by-corridor basis. Gasoline tax revenues are pooled at the State level, and allocated using investment rules that have little or nothing to do with conditions in particular corridors.

As a result, the public understandably balks at increases in gasoline taxes or other broad-based fees to finance transportation investments, recognizing the unfairness and inefficiency of charging one set of users for another's benefit.

But the public does understand the necessity to have higher fees *dedicated to the benefit of those who pay*. The 1988 passage of a public referendum to increase Bay Area bridge tolls is dramatic testimony to public acceptance of this principle.

Perform Cost-Benefit Analysis

The final step in bringing sound economics to transportation policy is to make sure that the net benefits of improvements are as great as possible. There are always many solutions to a particular transportation problem, and it is important to pick the one that yields its benefits at the lowest costs.

Presently, cost-benefit analysis plays only a minor role in decisions about transportation improvements. Projects are selected on the basis of engineering or political criteria. Cost-benefit analysis is

then sometimes performed (as part of the environmental impact process), but only to make sure that the project is not an obvious mistake.

The result is a lack of fiscal and economic integrity in our transportation investment decisions:

- For example, highway projects in California generally are not subject to cost benefit analysis. Indeed, the allocation of funding between northern versus southern California is based on an arbitrary 40/60 split.
- The wrong type of improvement may be selected. Miami made a politically based decision to build a light-rail system, for example, that is carrying less than 10% of its promised ridership.
- Allocation processes can be gridlocked, because there is no objective criterion for selecting among competing uses of funds. In the late 1970s, for example, spending on roads in California was stopped by debate over the proper role and value of such spending.

Without adoption of the basic elements of the market approach, the Bay Area can look forward to further decline in the quality of transportation service. The failure of current approaches is evident in the progressive deterioration of Bay Area transportation conditions. And the problem will not get better or reach a level of "tolerable" congestion. As bad as conditions are, they can and will get worse without action.

A Market-Based History

Historically, the market approach has successfully managed and financed most transportation systems. The London Bridge, 800 years ago, was financed and managed with a system of user charges. So were virtually all major highways and canals built in the United States before 1900.

The transportation systems of the Bay Area itself, until early this century, were financed and managed using market principles. Users paid the full costs of the railroad, ferry, and transit services they required. And investments in transportation facilities were governed by investors' desire to provide these services in a cost-effective manner.

Early in this century, however, highway programs were begun that used general government revenues to finance improvements. The notion of charging users for transportation services was lost, as was the need to employ sound investment cri-

teria when building new facilities. Although states (and the federal government, in 1932) began levying taxes on fuel, the link between user charges and the revenues needed for specific facilities was broken. Revenues generated in one transportation corridor were diverted to finance improvements in other corridors.

Investment decisions, particularly in the highway arena, became dominated by political, rather than economic, considerations.

At first, these policies seemed to be reasonably effective. In the days of low-cost land, relatively unconstrained tax revenue, and smaller urban populations, significant investments in transportation capacity were made. As time passed, however, the distortions caused by an uneconomic transportation policy became apparent, causing the problems we see today.

For Bay Area commuters, the market approach would make the trip to work shorter and more hassle-free than it is now.

A Solution that Works

Could the market approach work in transportation as well as it works elsewhere in our economy?

- How would it be implemented?
- What would be the effects on cost and availability of transportation?
- What would be the effects on land use and the environment?
- What would be the effects on low income citizens?

All of these questions have very encouraging answers. Indeed, reform of our transportation policy is probably the single most positive policy change we can contemplate as a region.

Implementing the Market Approach

The key to the approach is making users pay for transportation in relation to the costs they impose – no more, no less. This means that highway and transit user fees should vary when there are important variations in:

- level of congestion or time of day,
- costliness of the facility used, and
- pollution and other external costs.

This is in sharp contrast to current policy, particularly in the highway arena. Highway financing relies mainly on a flat-rate gasoline tax to assess users. Only in the case of bridge tolls and truck weight-distance fees is anything like a true user fee assessed.

“What Would My Commute Be Like?”

Implementation of the market approach would have a dramatic effect on Bay Area commutes. For Bay Area commuters, the trip to work would take far less time, and be more hassle-free than it is now.

- Average travel speeds today in congested corridors are about 15 miles per hour. Economists estimate that with market-based pricing and proper improvement policies, average trip speeds could improve to 45 to 50 miles per hour.
- Transit service will be much more effective. Implementation of highway user fees will stimulate transit use, making point-to-point service, with fewer transfers, more practical. And transit (and carpool) users will enjoy the travel-time benefits of uncongested roads.
- Out-of-pocket costs will be higher for those who choose to drive alone at peak times. For some, the value of the travel time savings will make these higher costs more than worthwhile. They will

According to *The Economist*:

“Road space is scarce...why not charge for it?”

February 18, 1989

continue to drive alone. For others, the improved speed and availability of bus transit and carpool alternatives will be more attractive than driving alone.

Peak-hour, peak-direction commuters from outlying counties to congested downtown areas, for example, would see higher auto user fees. Offsetting this, however, would be far shorter travel times and better transit alternatives.

- Reverse commuters likely would not be subject to higher user fees, but would enjoy the benefits from increased reverse-haul transit services.
- Local, downtown commuters also would face higher user fees, but would see decongested conditions and shorter travel times.

“How Would I Pay My User Fee?”

Instead of paying for key roads via a gasoline tax, direct fees would be charged, much in the manner of today's bridge tolls. Tollbooths, a traditional way to implement user fees, however, can themselves sometimes cause congestion and delay.

- A simple alternative to toll facilities is “area licensing.” A fee could be charged for a sticker that enables operation of a vehicle in congested areas during peak times. Non-compliance would be treated like other traffic violations.

This is the approach taken by Singapore. The license is sold at post offices and shops, and traffic personnel monitor compliance. As simple as it is, this scheme solved Singapore's transportation finance and management problems.

- Modern technology permits more sophisticated and convenient ways of implementing a user-based fee. Very low cost “transponders” already exist which could be placed on the vehicle or carried by the driver. These transponders are detected by electronic sensors in the roadway and permit the vehicle's owner to be billed directly for use of various roads at various times.

Each driver's bill thus could vary depending on the number of trips taken and the time of day. Peak period users would rightly pay much more than those traveling at noon or late at night.

Data from the foreign experience with the market approach confirm its predicted effects on congestion, travel time and choice of travel mode.

Automated collection systems are already in use. On a New Orleans bridge, users simply flash credit-card-sized transponders as they pass billing points.

- Automatic Vehicle Identification (AVI) and billing systems have been tested in many locations, including on the Coronado Bridge in San Diego, the city streets of Hong Kong, and New York's Lincoln Tunnel. A simple AVI system is in place at the San Francisco Airport. Such systems are also being installed on Japanese highways.

"How Would the Fee Revenues be Spent?"

A key feature of the market approach is that the fee revenues be collected and used on a corridor-by-corridor basis. Fee revenues would be used to improve transportation service in the affected corridor, for the benefit of those paying the fees.

In some corridors, the appropriate use of the fees will be to finance roadway expansion for automobiles. In others, it will be to support substitute modes of transportation, such as a busway or rail service.

The cost-benefit analysis element of the market approach will help make the selection among these choices.

"How Would the Market Approach Reduce Pollution?"

By reducing the number of cars idling in congested conditions, highway user fees would achieve a cer-

tain degree of pollution reduction. But the market approach also should be marshalled to address the problem directly.

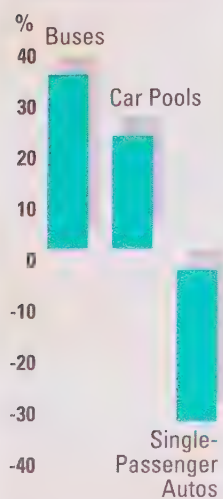
Here, too, the approach would rely on cost-based fees. Fees should be charged in proportion to the total amount of pollution emitted by individual vehicles, and the costliness of this pollution to others in the region. Such an approach ensures that those creating the costs, and not the general community, bear the cost of pollution.

A simple way to implement this approach would be to levy an annual emissions fee at the time of inspection. It would be based on the level of the vehicle's exhaust and the mileage driven. Economists have estimated that this fee may be 1.5 cents per mile for dirty cars operating in areas with poor air quality.

Drivers have many ways to adjust their behavior so as to reduce the amount they pollute and, hence, the cost of the pollution fees.

- They can keep their cars tuned up, and use their most polluting vehicles sparingly.
- The fees also would encourage retirement of dirty cars and purchase of the cleanest cars.
- This would then encourage car makers to build cars with improved emissions technology.

Singapore: Pricing Shifted Commuter's Choice of Transportation



Percent change in share of work trips, 8 years after implementation.

Source: Morrison, Transportation Research A, 1986

The Foreign Experience

Data from the foreign experience with the market approach confirm its predicted effects on congestion, travel time and choice of travel mode. The most data are available from Singapore, because they implemented the policy 14 years ago. In addition, Singapore has been most diligent in using the revenues for transportation improvements (mainly suburban parking and transit).

In response to a simple \$2.50 daily area license fee, a number of significant changes occurred in the pattern of traffic:

- Entry by single-passenger cars into the downtown declined 63 percent; car pools, once 23% of traffic, are now 47%.
- Automobile work trips declined from 56% to 23%.
- The share of work trips by bus increased from 33% to 69%.
- Total travel costs *fell* for the average commuter.

All of this was achieved with a simple, easy to administer system. The license numbers of violators of the scheme are noted by police, and a ticket sent to their home. The rate of violations is a mere one-tenth of one-percent of daily use.

Evidence from other implementations of congestion-specific user fees presents a similar picture:

- In Bergen, Norway, a "ring" of toll facilities around the city collects the revenues used to build city roads. The fee approach reduced traffic levels by 10% in one year.
- In Stockholm, Sweden, a new \$3.90 city center license scheme is estimated to reduce congestion by 35%.

Not only can the situation be improved, but it can also get worse, as illustrated by the experiences of European cities:

- Despite losing 15% of its jobs to the suburbs in 20 years, the center of London has massive congestion and driving speeds today average less than 11 miles per hour.
- In Paris, large investments in the RER (regional express-rail) network have been made, but highway congestion has continued to grow; cars crawl around Paris at a mere 9 miles per hour.
- In Athens, despite huge transit subsidies and an alternative-day driving regulation, roadway speeds average less than 5 miles per hour.

Actually, raising the cash costs of certain types of trips can make virtually all trips more economical.

A second, but less desirable, method of pricing for pollution could be a levy built into the gasoline tax. It is less desirable than a direct fee because it charges on the basis of gasoline consumed, not pollution produced. Its main effect will be to encourage fuel-saving vehicles. Nonetheless, pollution is related partly to the amount of fuel burned, and some benefits can be expected from this approach unless offset by large changes in the nature of the vehicle fleet.

What would happen to the fee revenues? The revenues would be used in ways that help achieve clean air in the Bay Area, or offset the effects of air pollution. They could be used, for example, to help finance tune-ups or upgrades of dirty engines. Some of the funds may be needed to offset the financial impact of the fees on low income households.

Effects on Transportation

What are the effects of implementing new user fees and financing on congestion and travel?

Highways

Adopting the market approach would require changes in the user fees currently paid by travelers. Peak-hour drivers traveling on expensive facilities, in particular, would face higher fees than those represented by current gasoline taxes and tolls.

These fees tell only part of the story, however. A National Science Foundation study of Bay Area highways estimated that the travel speed on a properly priced and financed highway would average 48 miles per hour, versus 15-20 miles per hour today in most commute corridors.

Transit

It is not the goal of the market-based approach to force people into transit. Each individual should be free to make a choice between automobile and transit modes of travel, based on a comparison of the cost and convenience of each mode.

Implementation of cost-based user fees on highways will tend to increase the popularity of high occupancy vehicle (HOV) modes of transportation, such as transit and carpooling. The reason is that these modes will tend to be considerably less costly per person than driving alone after implementation of highway user fees.

As household preferences shift toward HOV modes of travel, a number of responses can be expected.

- Private means of providing HOV service will be stimulated. The peak-period user fees charged on roadways will provide a strong incentive for carpooling and vanpooling.

Private bus services, which already exist in the Bay Area, will be stimulated for the same reason; because the user fee is spread over a larger number of passengers, such bus services will be more economical than driving alone.

- Public transit demand will increase. The mode to respond most quickly will be bus transit service. Bus systems are able to easily reconfigure their routes, and able to provide the most convenient, point-to-point quality of service.

- The quality of bus transit service will increase significantly. With reduction in roadway congestion, buses will be able to travel considerably faster, providing a higher level of service.

- The financing problems of transit will be eased considerably. The main reason that transit today cannot be supported out of the fare-box is because transit is asked to compete against private automobiles traveling on underpriced, peak-period highway facilities.

With proper pricing of highways, these disadvantages disappear. And the operating cost of bus transit service will be reduced considerably, as higher speeds on highways permit a greater number of round trips in the AM and PM commutes.

- Special bus transitways or rail transit systems also could be built in the congested corridors.

The end result of reduced roadway congestion and stimulation of HOV use is that all users, whether driving alone or traveling in groups, should experience an overall improvement in the quality of their commute:

- The higher direct fees on roads would be offset by much shorter travel times, for both drivers and HOV users.
- The point-to-point service quality of bus transit service, in particular, should improve so that many commuters have a more convenient, as well as more rapid, commute.
- Peak period use would be more costly than travel at other times, but roads would be more accessible and uncongested.

Vehicle charges will be simple and effective solutions to the mobile-source pollution problem.

As paradoxical as it may seem, by raising the cash costs of certain types of trips, virtually all trips can be made more economically. It is our failure to recognize this fact that has paralyzed both our transportation system and transportation policy.

Transportation and Pollution

Although there is presently no system of vehicle emissions fees in use, there is no doubt that such fees would reduce pollution.

Emissions charges are in widespread use to control water pollution. If the experience with water pollution charges is any guide, vehicle emissions charges will be a simple, and effective solution to the mobile-source pollution problem:

- The Netherlands has employed effluent charges since 1969. Since that time, effluent discharges have declined 90%.

- Germany and France have had similar experience with effluent charges. The Ruhr River Valley, once among the most polluted waterways in Europe, now supplies clean drinking water.
- Closer to home, the City of South San Francisco implemented a system to finance sewer treatment, using fees linked to the quantity of pollutants. The amount of measured pollutants declined by as much as 50% in one year.

As in the case of fees for congestion or other road costs, the implementation of emissions charges does not raise the cost to society as a whole. It simply redirects the burden from the innocent bystander, to the source of the problem. In the end, as pollution abates, the costs for society as a whole are reduced.

Effects on Land Use

Two of the most lamented developments in the Bay region are the dispersion of jobs and residences out of the traditional cities, and pollution of the air. Both "sprawl" and air pollution are major items on the public policy agenda, and have resulted in no-growth initiatives and calls for road construction bans.

Both problems are related to our failed transportation policy. If a market approach to transportation were enacted, solutions to sprawl and pollution would be easier to implement.

Land use and transportation policy are intimately related. Without user fees that reflect the cost of highway facilities, governments and developers make land-use decisions and households make residential location decisions without regard to the transportation costs they are imposing on the region.

Then, as rising congestion costs make the older places of employment inaccessible, employers follow the workers out to suburban areas:

- Nationwide, the share of office space in the suburbs has grown from 25% in 1970 to over 60% today.

- This dispersion of jobs has occurred primarily outside the most congested cities – New York, Dallas, Houston, Atlanta, and the major California cities.

- In San Francisco, 12-16,000 jobs per year have been lost to suburban relocations.

- Land use regulations also play a role in these trends. The proper pricing of peak hour commutes would improve commutes from all areas of the region. However, the relative improvement would be less on the periphery of the region than in its center. As a result, the pressures for sprawl and the concomitant increase in traffic congestion would be lessened. To be fully effective in rationalizing the region's land use, however, some reforms in land use policy would also be desirable. Specifically, planners need to stop discouraging jobs and housing growth in the region's center. This will be more politically palatable with proper pricing since dense development will not, per se, be a source of congestion and pollution.

- A Singapore study revealed that access to labor was improved for downtown businesses after implementation of a market-based system there.

The market approach is fairer to low-income citizens because it generates revenue to offset financial hardships.

Is the Market Approach Fair?

It is important that lower income citizens not become the victims of the transportation crisis. The harsh, regulatory remedies that are alternatives to our approach would be unfair to these citizens, particularly if they result in severe damage to the Bay Area economy.

In contrast, the market approach will remove the unfair burden of transportation finance that has been borne traditionally by the poor. By improving transportation options, and by collecting revenues that can be used progressively, the market approach is the fairest to low-income citizens.

One of the most common misperceptions of economic solutions is that they involve an unfair burden on low-income households. Indeed, at first blush it would seem plausible that greater reliance on user fees would have a regressive effect.

But a closer look, reveals the fallacy of this view:

- *Low-income workers tend not to drive to work in the peak direction to the downtown core.* Low-income households tend to be reverse commuters, traveling away from the central areas. Low-income households also tend to own fewer vehicles and drive less than high-income households. User fees on peak-direction users, therefore, generally will have a progressive impact;
- *Low-income households tend to be users of bus transit services,* and suffer from having to inch along in traffic congested by single-occupant auto users. They would benefit from a policy that eased traffic congestion, and encouraged more intensive development of bus transit and high-occupancy vehicle lanes;

- *Any possible adverse effects can be offset by effective use of the fee revenues.* For example, fees can be used to support alternative transit service, or fund special rebate or subsidy programs for the poor.

Critics of the market approach also fail to consider the effects of current policy. Low-income households are clearly not benefiting from the status quo. Current policy is responsible for a number of trends that have adverse effects on low-income households:

- Because of congestion and deteriorating transportation service, jobs are migrating away from the core areas where most low-income households live;
- Most major transportation improvements are directed at the peak-hour commute, from the suburb to the core. Low-income households receive very little benefit from these investments but pay for them with their sales, property and gasoline taxes. BART, for example, serves primarily higher income commuters. Yet the burden of the taxes to finance it is borne disproportionately by lower income households;
- The expansion of urban transportation facilities often occurs in low-income neighborhoods;
- Air pollution, usually concentrated in the core area, imposes a much larger burden on the poor than the rich. Black asthma and emphysema rates, nationwide, are four to five times the level for whites.

In summary, there is no justification to the claim that the market approach is regressive. Indeed, in making those who use transportation facilities or pollute the environment pay, it is the most equitable solution of all.

The Poor Are Not Peak Direction Commuters



Regulations tend to be much less effective, and more costly than price incentives.

Why Not Use a Regulatory Approach?

A proposed alternative to the market approach is the regulatory or “administrative” approach. Instead of creating economic signals to guide users to cost-effective decisions, the regulatory approach tries to change behavior through mandates.

Often out of frustration with current policy, regulatory approaches are proposed or adopted to solve transportation problems. Typical cases in the Bay Area include:

- Pleasanton passed an ordinance requiring employers with 50 or more employees to have no more than 55% of their workers driving alone to work during peak hours;
- Walnut Creek citizens passed a referendum halting commercial development until congestion at 75 intersections falls;
- Proposals for Transportation Control Measures for cleaner air include bans on downtown driving, regulation of car ownership and driving days, and other interventions in citizens’ decisions.

Regulations are Inefficient

To the proponents of these measures, they seem more “effective” and less “unfair” than the market approach. In fact, the opposite is true. Regulations tend to be much less effective and more costly than price incentives.

By requiring the same level of compliance from everyone, the regulatory approach has the potential to impose tremendous costs on certain individuals and firms. Price mechanisms, in contrast, give the strongest incentives to those who can adjust with the least burden.

Regulations also generate no revenue; they impose their burden on those being regulated, but provide no way of mitigating that burden. Caltrans plans to use ramp-metering state-wide, for example, to control congestion on California highways. This approach forces travelers to spend time on entrance ramps to discourage their use of the freeway. The time spent on the entrance ramps is lost forever and is a cost of the policy.

The use of fees, on the other hand, could achieve the same level of congestion reduction, but would generate revenue that could be used to offset the burden on the traveler, expand the facility, provide transit service, and so on.

Regulation is Unfair

On the surface, regulations such as bans on driving alone to work or bans on driving to the downtown, seem to be fair because they treat everyone equally. In reality, regulations tend to be much less fair than a market approach.

Compliance with a regulation can impose widely disparate costs on different users. A downtown driving ban, for example, is more burdensome to someone trying to get to a hospital than someone driving there simply to get a newspaper. A regulation cannot distinguish between these uses, but a user fee can. The user fee would discourage the trip to get a newspaper. But the high priority trip to the hospital would be made.

If there are any adverse effects, the user fee approach supplies revenue that can be used to abate them. The regulatory approach can only offer exemptions from regulation. In the end, regulations fail because they cannot survive the pressures to dilute them for selected users.

The market approach is directed at the problem, whereas regulation can only address the symptom. The crux of urban transportation problems is a failure of certain users to pay their fair share of costs. Congestion and pollution are only symptoms of that problem, and cannot be legislated away.

In summary, the transportation crisis can be handled more equitably and more efficiently by the market approach. It is the preferred solution and, for the Bay Area, it is a solution that will work.

The corridor orientation of our region thus makes design of a user fee financing system easier, and makes it more effective in lowering transportation costs.

Will it Work in the Bay Area?

The characteristics of the Bay Area make economic solutions even more promising than they would be in other areas of the country. Most importantly, Bay Area citizens already show some signs of favoring the approach. They recognize that the only approach that can reduce total cost of transportation in the Bay Area is one that looks to users for financing. Experience shows that, once implemented, public acceptance of the economic approach is very high.

There are no technological barriers to implementing the market approach in the Bay Area. An area licensing scheme, or more sophisticated Automatic Vehicle Identification systems could be used to implement the replacement of general taxes by user-specific charges. Demonstration programs here and abroad have revealed that user-based fees are technically practical.

The challenges clearly lie in the realm of public policy. Public awareness of the value of the market approach needs to be heightened. And existing fiscal and decision-making processes in the transportation arena need to be reformed.

An Ideal Setting

In many ways, the Bay Area is an ideal setting for innovative transportation financing. It may well be easier to implement here, and with greater benefits, than other areas of the country.

The area has favorable geography, an extensive, in-place road system, and a public committed to maintaining the Bay Area's unique lifestyle and environment. All of these factors combine to make the market approach the best for the region.

Favorable Geography

Dispersion of activity normally occurs in reaction to congestion and, indeed, has happened somewhat in the Bay Area. For the market approach to work most effectively, there must be some potential for using existing congested facilities more efficiently by high-occupancy vehicles. Once a region's economic activity becomes highly dispersed, such utilization changes are harder to stimulate, and the improvements in transportation cost are slower to evolve.

The special geography of our region, however, has acted to limit dispersion somewhat. Bodies of water and mountains are arranged so as to create natural development corridors. The downtown economies of Bay Area cities, while suffering losses in activity, remain relatively viable compared to many other U.S. cities.

These natural development corridors also have made it practical, even under current policies, for high-occupancy vehicle use to develop. Although less than 25 percent of Bay Area trips are in transit or carpool vehicles, that is twice the proportion of regions with flatter geographies.

The corridor orientation of our region thus makes design of a user fee financing system easier, and makes it more effective in lowering transportation costs.

Transportation Infrastructure

The Bay Area also has the advantage of a well developed and diverse transportation infrastructure. In particular, the Bay Area has a well-developed, if inefficiently utilized, freeway and local road system. The Bay Area has about 50,000 miles of roads, or about one mile of roadway for every 90 vehicles. This is a relatively rich endowment of road capacity compared to most other major cities throughout the country and the world.

The road system is the key to a quick response to the incentives created by a user fee-based financing system. Additional rail or highway capacity cannot be added quickly. However, by stimulating additional HOV utilization of existing roads, user fees can very quickly improve the performance of the transportation system. It is estimated that as little as a 10 percent shift away from single-occupant vehicles would significantly reduce congestion and improve transportation system performance.

Commitment to Lifestyle and the Environment

Adopting the market approach would decongest our daily travels and improve air quality. Such positive changes are likely to be particularly valued in the Bay Area. Many of the current residents of the region were attracted by the area's distinctive, high level of amenities. Unlike most regions, our primary air pollution problems are not industry-related. Therefore, it is critical to address vehicle emissions if we are ever going to make progress in improving our air quality.

The market approach thus should be attractive to those who value an accessible, and clean, outdoor environment. Properly implemented user fees would both reduce congestion and provide an incentive for the use of less polluting vehicles. Adopting the approach will contribute to both an improvement in the quality of Bay Area life and reduce pollution.

Once properly informed of the advantages of the market approach over the alternative, the public will provide willing support.

A Receptive Public

The “conventional wisdom” among transportation policy makers is that the market approach is not well received by the general public. These policy makers prefer, instead, an extension of the status quo of direct restrictions and broad tax financing of transportation.

In fact, there is considerable evidence of public support. The public, once properly informed of the advantages of the market approach, will provide willing support.

- The public is willing to pay higher fees for transportation if the fee revenues are used productively to their benefit. In the Bay Area in 1988, more than 70 percent of the voters supported bridge toll increases for corridor improvements. This vote was clear support for the notions that users should pay and that those who pay should enjoy the fruits of their payments.
- Public satisfaction with economic approaches can be seen in other areas that have used them. In Bergen, Norway, the share of the population favoring their new user fees rose from a mere 13 percent just before adoption to a significant majority after implementation. There now are plans to extend the approach to other Norwegian cities. In Singapore, the area licensing scheme has now been in operation for over 14 years, with strong support by the citizenry.
- The public is accustomed to user fee finance of most other public utilities. The telephone system, for example, employs precisely the same time-varying, facility-varying charges that are proposed here for roadways. Indeed, the quality of service enjoyed by telephone users is a good model of what might be expected from a properly implemented market approach. Despite strong peaks in activity, the telephone system is virtually uncongested at all times.
- The public also increasingly favors user fees over general taxes for public services. According to a National League of Cities survey, 69 percent of cities of 50,000 or more raised user fees in fiscal year 1989, and 36 percent of those had added new fees. In many cases, these fees were for transportation improvements.

- Roads financed by the toll-type of user fees are being employed by a growing number of communities to finance new road capacity. In recent years, new toll roads for urban transportation have been added in the Virginia suburbs of Washington, D.C., Miami, Orlando, Houston, Chicago, Dallas, and Denver.

The Challenge

The Bay Area has an astute and well-educated population. They would be receptive to an approach that promised cost-effective relief from our region's transportation woes. In truth, the challenge lies with transportation planners and policy makers. It is they who must take the lead in tailoring the market approach to the Bay Area's needs.

Estimates of fair user costs must be made. A technology for collecting the fees must be selected. The process of funding improvements must be modified and linked to the fee revenues.

These are not small tasks, but once accomplished will provide the Bay Area with a simple and effective way of managing and financing transportation.

The task of implementing the market approach is simple compared with the alternatives. At present, we face the real prospect of a bureaucratic nightmare of direct controls, regulations and restrictions. Such an approach will be less effective, more costly, and less fair than an approach that has users bearing their own costs.

The choice is ours – to deepen the crisis, or use a productive approach that is at hand: the market approach.

Market-Based Solutions to the Transportation Crisis:

A Two-Part Report

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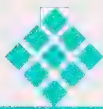
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Market-Based Solutions to the Transportation Crisis:

Incentives to Clear the Air and Ease Congestion



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Summary

Market-Based Transportation Solutions

The Bay Area Economic Forum offers its recommendations for transportation control measures (TCMs) to meet air quality standards mandated by law. The mandates will require an estimated reduction of 35% in motor vehicle emissions by 1997, which means that drastic measures must be considered.

The Forum urges reliance on economic incentives that are typical of a free market economy, measures that give individuals economic reasons to reduce air pollution. By directly linking the source of pollution with payment for the pollution, the Forum approach steers people toward less-polluting behavior, while maintaining freedom of choice. Revenues generated by the measures can fund improvements (such as increased transit and car-pool lanes) in the same transportation corridors where they are collected and remedy any equity problems.

The Forum recommends against extreme regulatory measures such as driving restrictions and capacity restrictions. Such measures would endanger the region's economy and are excessively bureaucratic, expensive, or fail to address the basic causes of the problem.

Each proposal is rated on five criteria: (1) impact on air quality, (2) impact on the economy, (3) impact on mobility, (4) implementation or feasibility, and (5) political and public acceptability. Recommended measures include:

Primary Recommended Measures: Incentives to directly reduce emissions.

1. Smog fee. Charge a fee based on emissions level of each vehicle.
2. Enhanced vehicle inspection and maintenance program. Reduce emissions by tougher standards and requirements for compliance.

Secondary Recommended Measures: Incentives which reduce emissions indirectly through reduced trips and vehicle-miles.

1. Higher bridge/road tolls, especially during peak hours.
2. Higher gasoline tax.
3. Employer-based financial incentives, including employee travel allowances and parking charges.
4. Regional network of high-occupancy vehicle lanes.

Political acceptability. We acknowledge that our recommendations will be difficult to accept politically. But it is likely that any alternative proposals, if they are serious efforts to meet the goals, will be even more difficult politically. The recent earthquake has perhaps changed the threshold of political acceptability by opening up new opportunities that have previously been dismissed as impossible.

Fairness considerations favor our recommendations, because – unlike most competing proposals – they generate revenues to address potential equity problems. The fundamental equity issue is whether the polluter should pay. Our measures closely link payment to solve the problem with the pollution source. Many other measures break the link between pollution source and payment, and they penalize the low-income driver indirectly through higher prices, taxes, and lost economic opportunity. Economic incentives address other equity issues, such as equal treatment for all employees, while regulatory measures tend to place most of the burden on only a small segment of drivers, based on the size of their employer.

Employer-based commute programs are measures which have potential to make a real contribution. But they can work only if accompanied by substantial improvement in the commute options employers are asked to promote.

The Clean Air Act requires reducing vehicle emissions by one-third. We face tough decisions. The status quo is not an option.

What Are Transportation Control Measures?

To meet the stringent air quality standards adopted under the 1988 California Clean Air Act, the Bay Area Air Quality Management District (BAAQMD) has been given the authority and the mandate by the State to impose "transportation control measures" (TCMs) on the Bay Area. The TCMs must reduce total trips, vehicle miles traveled, and traffic congestion, and will become part of the Regional Air Quality Plan, which aims to reduce vehicle emissions by 35% in 1997. The TCM plan is due June 1990.

These ambitious reductions mandated by law will require extraordinary, perhaps painful, changes. Any effective program will be unpopular at first – until the public and policy-makers begin to view it as the best among difficult choices.

While we do not argue that the economic or "market-based" approach represents the sole answer to the problem, nor that it will automatically meet the ambitious clean air targets, we do contend that such an approach must be the key element of any successful strategy.

How Are Measures Evaluated?

The Bay Area Economic Forum offers ideas for transportation control measures which will maintain the region's economy and quality of life.

Implementation of any meaningful TCM program will require legislation at the state level. The Forum intends to be active in advocacy for enactment of such legislation.

The Forum examined major measures under consideration, and focuses primarily on several that employ economic incentives and minimize potential damage to the regional economy.

Proposed measures were evaluated by these five criteria:

- impact on air quality,
- impact on the economy,
- impact on mobility,
- feasibility/implementability, and
- public/political acceptability.

Measures are placed in three categories:

Primary: Directly and unequivocally cause reduction of vehicle emissions.

Secondary: Likely to reduce total driving, thereby indirectly reducing emissions and also reducing traffic congestion.

Non-Recommended: Should not be adopted, because they sacrifice other values to an extreme degree, are cost-ineffective, administratively infeasible, or even counterproductive.

Are These Measures Acceptable?

Over 100 different measures are now under consideration. Many represent radical departures from the status quo. But the *status quo is no longer an option*. The Forum's recommended measures are more attractive when compared to other approaches to arrive at the same goal. It is necessary to compare all alternatives and judge them by the same standards of political acceptability and effectiveness, as the Forum has done.

The October 17 earthquake created an opportunity to change the definition of what is acceptable. In response to the earthquake, literally overnight, transit services were created, highway lanes paved, private parking lots opened to the public, and institutional cooperation achieved. Personal travel behavior changed to cope with the emergency. Previously unthinkable ideas are now being proposed by mainstream political leaders and taken seriously. Now, if ever, is the time when bold solutions have a chance to be accepted.

The Forum's measures are more effective, more acceptable in a free society, and fairer than major alternative approaches. Although no plan can perfectly satisfy everyone's definition of fairness, included is a special discussion on equity to argue the greater fairness of our proposals, compared to both the status quo and to alternative proposals.

If the public and policy-makers are fully informed about the relative merits of competing alternatives, they will eventually accept measures that may initially be resisted. The purpose of this report is to bring bold ideas into the public policy arena and make them serious contenders in the debate.

Emissions-based charges reward the drivers of the cleanest cars and make the owners of the dirtiest cars pay.

Primary Recommended Measures

■ Smog Fees

Charge fees proportional to total vehicle emissions. Use revenues generated to pay for improving options to driving alone and to offset hardships on low-income driver.

For example, a vehicle emitting 12/parts per million (ppm) hydrocarbons would be charged an extra \$150 to register, 11/ppm an extra \$100, 10/ppm an extra \$50, under 8/ppm pays nothing. Charge either by emission level only, or by emission level times miles driven since last inspection. If mileage is a factor, multiply pollution rating times miles: e.g., one cent/mile x 10,000 miles = \$100 smog fee. The calculation and billing can be done routinely as part of the regularly scheduled emissions inspection program. Using the mileage factor is preferable, because it gives a direct, unequivocal incentive to drive cleaner cars and drive less.

Advantages

- Provides strong incentive for vehicle manufacturers to build much cleaner cars, as California provides one-tenth of U.S. auto market;
- Provides incentives for vehicle owners to use "dirtier" vehicles less often and phase them out more quickly;
- Revenues can be used to improve transportation options (more transit, carpool lanes, etc.) and to mitigate hardships on low-income drivers.

■ Enhanced Vehicle Inspection

Possible enhancements include:

- increased inspection frequency,
- higher spending limit to bring vehicles up to code,
- tighten emission standards,
- require more sophisticated testing equipment and inspector training and enforcement.

For example, require annual inspection (currently every two years), raise repair cost ceiling to \$400 to bring up to standard (compared to current \$50-300, depending on vehicle age).

Advantages

- Reduces directly what comes out of the tailpipe.
- Greatest impact in controlling the relatively few "dirtiest" vehicles, which do disproportionately greater damage to air quality. One recent study showed that more than half of vehicle carbon monoxide is caused by 10% of the vehicles.

The program can be implemented in the short-term, because the vehicle inspection system and infrastructure are already in place in California (stricter inspections are common in many other states).

Smog Fees and Vehicle Inspections

Effects:

Air quality: Substantial improvement; tailpipe emissions reduced dramatically.

Economy: Negligible cost to economy, substantial savings from less damage caused by air pollution.

Mobility: No change.

Implementation: Easy; inspection mechanisms already in place, but need upgrading.

Acceptability: Acceptable, if it looks better than alternatives. Fairness of making polluters pay, as long as issue of low-income driver is addressed.

Strategy:

Both Primary Measures clean up the air directly with minimal cost to the overall economy or business climate. The only potential negative economic effect is a reduction of retail purchasing power caused by money spent on bringing vehicles up to standard. Over time, emission-based incentives would push motorists toward driving cleaner cars and driving less overall. This would also give manufacturers an economic reason to build cleaner cars for the marketplace.

Charging the users of the most congested facilities at peak-hours helps cut down congestion and air pollution.

Secondary Recommended Measures

■ Tolls on Bridges and Highways

Charging new or higher tolls on bridges, new highways, and congested sections of existing highways is a direct way to link the costs of vehicle-caused pollution to its source: making the polluter pay.

Option 1

Higher bridge tolls for peak hours, coupled with more high-occupancy-vehicle (HOV) lanes, buses, trains, park-and-ride lots. Use bridge toll revenue to pay for these transportation improvements.

For example, bridge tolls might be raised to \$3 for vehicles carrying less than three passengers during morning peak hours (5-10 a.m.), because this is the most critical time for air pollution formation. The revenues are then used to pay for more transbay bus service, BART trains, park-and-ride lots, and transit fare reduction.

Option 2

New toll roads or tolls on existing roads, peak-hour priced. If any new highways (or congested stretches of existing highways) became toll roads, a much greater percentage of total driving could be affected than by only charging on bridges. Inexpensive technology is already available and in use in a number of locations that does away with tollbooths. A device in the vehicle registers at a point in the roadway, and the vehicle owner receives a bill periodically to pay for usage of the toll road.

Increased Tolls

Effects:

Air quality: Significant, if spaces not filled by new drivers.

Economy: Negligible cost to economy. Possible net cost or net benefit to individuals, depending upon whether they choose lower-cost options. Generates revenues for better transportation options and to address equity issues.

Mobility: Improved, due to more rational use of capacity.

Implementation: Easy. Can be done soon. Mechanisms already in place. For new toll facilities (Option 2), mechanisms must be installed.

Acceptability: Acceptable, if it looks better than alternatives. Fairness of making polluters pay. For new tolls (Option 2) there would be objections to charging for something that had previously been free.

■ Gas Tax Increase

A higher gas tax would reduce driving somewhat, but the price increase must be significant to make a difference. The revenues must be used for improved transportation options (HOV lanes, buses, trains, park-and-ride, etc.) and to offset burdens on low-income drivers. Revenues should be returned to local areas where they are generated.

The main advantage is that the gas tax is a long-established user fee for which the collection mechanism is already in place. The disadvantage is that the charge is the same for all driving and does not reflect the differential burden placed on the system by driving on congested vs. non-congested facilities.

Gas Tax Increase

Effects:

Air quality: Significant, if increase high enough.

Economy: Negligible cost to economy. Could be net cost to individual and hurt retail purchasing power, if no effect on travel behavior; but would save money, if individual shifts to other travel modes.

Mobility: Probable improvement. Will improve options through revenues generated.

Implementation: Easy. Mechanism already in place.

Acceptability: May be better than alternatives. An established, accepted user fee. Polluter pays approximately in proportion to pollution caused.

Current practice encourages employees to drive alone. We need different incentives, so employees will try something different.

■ Financial Incentives For Employees

Institute an employee travel allowance. Employer gives employee a commute allowance, which can be spent as employee chooses. This approach gives employees maximum choice and clear economic incentives to choose less polluting commute options.

For example, the employer gives employees a \$75 monthly travel allowance, but charges \$75 for parking, which had formerly been free. Employee can drive alone and park as usual, with no net loss or gain; or carpool with two others, split the parking costs, and pocket \$50; or take transit and pocket the difference between transit ticket and parking, and cut car operation costs.

The City of West Hollywood recently instituted a travel allowance plan, providing \$45 monthly; an additional 15% of its employees stopped driving alone.

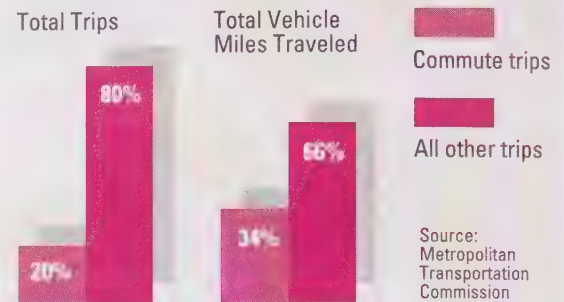
Tax law changes would make employee travel allowances even more attractive. Currently, employer-paid travel allowances are treated as taxable income, reducing their value to the employee considerably. Yet, employer-provided “free” parking is a totally tax-free benefit. These tax policies represent incentives to drive alone – precisely the opposite of what the Clear Air Act encourages.

Another option is simply to start charging for employee parking with no travel allowance. Charging for employee parking would send a clear economic signal about the value of land used for parking and the cost of “free” parking to the transportation system. If employees were charged to park where it had formerly been provided free, the money generated could be used as offsetting compensation to employees or to subsidize options to driving alone (e.g., vanpools, low-cost transit tickets).

The employer would simply start charging for space in the employee parking lot. This has proven effective in practice. For example, two side-by-side office towers in Los Angeles house about 1,700 employees each. The company in one building spends over \$1 million in extensive employee commute programs, but gives free employee parking. The other spends little on a program, but charges about \$60 monthly for parking. They have virtually identical ridesharing rates (59%).

Limitations: Affects only the end of the trip, but not necessarily the number of miles or hours driven, and it has no effect on non-commute travel.

Commute vs. Non-Commute Driving



Commute travel constitutes only 20% of total trips. Any comprehensive TCM plan needs to address both commute and non-commute driving.

Employer Incentives

Effects:

Air quality: Could be much improved, especially for critical morning peak.

Economy: Positive. More purchasing power for other items. More land available for uses other than parking.

Mobility: Improved.

Implementation: Depending on government rules, could be simple or complex.

Acceptability: Good, if it does not cause significant lowering of employee benefits or employer costs to rise greatly. Freedom of choice attractive. Fairness of making incentives available to all.

HOV lanes are one of the most cost-effective ways to increase highway capacity.

■ High-Occupancy-Vehicle Lane Network

Use new and existing highway lanes to create extensive high-occupancy vehicle (HOV) or “carpool” lane network, especially during peak-hours, so drivers will use ridesharing options. No tolls for HOVs. HOV lanes are already working well in the Bay Area (for example, the Bay Bridge approach and several stretches of highway in Santa Clara and Marin counties). The problem is that there is not yet an extensive, connected HOV lane network in the region, but only a patchwork of a few miles here and there. An extensive network would provide potential users with much greater incentives in time-saving.

How Would It Work?

Certain highway lanes are designated for use by carpools, vanpools and buses only. Those lanes are considerably less congested than the rest of the highway.

For individuals, advantages include:

- value of time saved by using HOV lanes, and
- money saved from lower vehicle operating costs.

HOV Lane Network

Effects:

Air quality: Improved.

Economy: No cost to economy, very inexpensive capacity increase compared to other infrastructure. Saves money for individual.

Advantages for the transportation system:

- cheaper to designate or build HOV lanes than to build new highways or rail lines, and
- many more people can move through existing facilities, and therefore it is much more cost-effective.

A bus takes up the same road space as three cars, but if it is carrying 30 passengers, it is ten times more efficient in “people-moving” than are the three single-occupant cars it replaces. If the bus passengers riding on an HOV lane network receive a bonus of saving considerable commute time, they are much more likely to use this option. HOV lanes are a key factor in improving the attractiveness of public transit and, of course, carpools and vanpools as well. Such a network would contribute to congestion reduction and air quality.

A high-occupancy vehicle lane network throughout the Bay Area would provide a major incentive for travelers to save both time and money. The worse the congestion, the greater the advantage in using HOV lanes.

Mobility: Improved.

Implementation: Easy. Mechanisms already in place. May require more Highway Patrol officers to enforce.

Acceptability: Highly acceptable compared to alternatives – no direct cost and minimal restriction on personal freedom. Fairness of making benefit available to all.

Retaining Individual Choices

The Primary and Secondary Measures recommended here have a common ingredient: they rely on individual choices within a marketplace strategy. The function of public agencies is to structure the environment within which choices are made, so that the individual is steered toward choices that pollute least and are most cost-effective.

Although the strategy is market-oriented, it will require political decisions to create “prices” in the market. Government must set up a system in which prices charged better reflect the true costs of providing the services made necessary by individual driving behavior. This must include the costs congestion and pollution impose on our region.

These Secondary Measures are not as direct in cleaning the air as the Primary Measures, because they do not cut the emissions per mile driven. However, they are likely to improve the air by reducing the amount of driving and congestion. The Secondary Measures also have the major added bonus of improving the carrying capacity of the transportation system the most.

How The Market-Based Approach Would Affect Bay Area Commuters

Suburb-to-Suburb Commuter

What follows are scenarios of how our market-based program would affect hypothetical commuters with a variety of characteristics. Remember that the program must comply with the mandate to reduce vehicle emissions one-third by 1997. Our program is mild compared to the extreme restrictions needed under a regulatory program severe enough to cut driving by one-third.

Here is a cost/benefit accounting of three different scenarios. Not included in the monetary accounting are some difficult to quantify non-monetary benefits that may be of even greater value: Less commute stress, greater productivity, more personal time for family and other pursuits, cleaner air, better health. These benefits are available to the commuters in all the following examples, if they choose a non-drive-alone option much of the time.

Basis for Calculations

Vehicle operating costs:
24 cents/mile.

Source: U.S. Government, IRS standard, 1989.

Value of commuter's time:
\$10/hour. (Actual Bay Area salary average is \$14/hour, so \$10/hour is conservative.)
Sources: Bureau of Economic Analysis, U.S. Dept. of Commerce; Assoc. of Bay Area Governments.

Estimated average non-commute miles per year:
8,000 miles.

Source: Metropolitan Transportation Commission.

Workdays per year:
240 (5 days/week for 48 weeks).

Sample Market-Based Package*

- "Smog fee" of up to two cents/mile, based on vehicle emission level times miles driven.
- Bridge tolls of \$3 during morning peak-hour (5-10 a.m.), but transit and carpools do not pay tolls during peak-hours, as currently.
- Weekday morning peak-hour toll of five cents/mile charged on the most congested 100 miles of highway in the region; vehicles charged through automatic identification system and owner billed periodically.
- Designate network of high-occupancy-vehicle (HOV) lanes on congested portions of Bay Area freeways, with supporting park-and-ride-lots at entrances; no toll for vehicles in HOV lanes.
- Employee travel allowances instead of free parking.
- Use funds generated by tolls to increase transit frequencies and reduce fares in the same corridors where the toll is collected.

**Note: This is an example of a combination of measures. It is not to be construed as the Forum's adopted or preferred program.*

Livermore to Sunnyvale

Employee currently spends one-hour and ten minutes driving the 42-mile trip each way, and has free parking at work.

Travel Allowance: Under our program, the employee is given a \$75/month travel allowance instead of free parking, but is charged \$75/month for a parking place. Instead of driving alone, the employee can carpool with two co-workers, split cost of a parking place with other employees and pocket 2/3 of the travel allowance, or \$50/month. \$50/month x 12 months = \$600/year.

Vehicle Operating Costs: As a result of carpooling, annual commute driving reduced by 13,440 miles ($2/3 \times 84 \text{ miles} \times 240 \text{ days} = 13,440$). At 24 cents/mile, the saving is \$3,226 ($24 \text{ cents} \times 13,440 = \$3,226$).

Time Saving: As a result of using HOV lanes, saves 15 minutes each way, 30 minutes each day, or 120 hours/year. Valuing the person's time at \$10/hour, the monetary value of time saved is \$1,200.

Smog Fee: Assume employee pays a mid-range "smog fee" of one cent/mile on vehicle mileage of 14,720 miles (6,720 commute miles plus 8,000 non-commute miles). One cent x 14,720 miles = \$147.

Tolls: Pays a toll on the region's toll roads occasionally, even though commute is non-toll as a result of carpooling. Assume a miscellaneous 1,000 miles on toll roads: five cents x 1,000 miles = \$50.

Projected Costs & Benefits

Extra Costs

\$ 147	Smog fee
\$ 50	Road toll
\$ 197	Total Costs

Extra Benefits

\$ 600	Employee travel allowance
\$3,226	Reduced vehicle costs
\$1,200	Value of time saved
\$5,026	Total Benefits

NET BENEFIT: \$4,829

City-to-City Commuter

Suburb-to-City Commuter

Oakland to San Francisco

Employee currently takes BART to downtown San Francisco, 30 minutes each way, \$3.50 daily round-trip fare. No employer-paid parking.

Travel Allowance: Receives a \$75/month employee transportation allowance, which is all profit to the employee, who had no transportation benefit previously. \$75/month x 12 months = \$900/year.

Transit Saving: BART fares are reduced 10%, as a result of new revenues generated by higher Bay Bridge tolls. The result is a saving of \$.35/day x 240 days = \$84/year.

Time Saving: Also from bridge tolls, train service improved, saving five minutes each way, 10 minutes/day x 240 days = 40 hours/year, or \$400.

Smog Fee: Assume mid-range smog fee rate, one cent/mile. 8,000 non-commute miles/year x one cent = \$80.

Tolls: None, since transit is sole commute mode.

Projected Costs & Benefits

Extra Costs	
\$ 80	Smog Fee
Extra Benefits	
\$ 900	Employee travel allowance
\$ 84	BART fare reduction
\$ 400	Value of time saved
\$1,384	Total Benefits

NET BENEFIT: \$1,304

San Rafael to San Francisco

Employee currently spends 50 minutes driving alone each way on 25-mile trip during peak hours. Employer now pays \$100/month for employee parking in office building's garage, but this will change under our program. Here are the numbers comparing drive-alone vs. ridesharing choices.

Option 1 – Drive Alone

Travel Allowance: Receives \$75/month transportation allowance in lieu of employer-paid parking, but derives no net benefit, because it goes toward paying the garage's \$100 monthly parking fee, so pays additional \$25 monthly out of pocket. \$25/month x 12 months = \$300.

Vehicle Operating Costs and Time Saving: No change.

Smog Fee: Assume mid-range smog fee rate of one cent/mile and 20,000 miles/year on the vehicle (12,000 commute miles, 8,000 non-commute). One cent x 20,000 miles = \$200.

Tolls: Pays the new \$3 bridge toll, \$1 extra per day x 240 days = \$240. Pays five cents/mile road toll on the most-congested ten miles of the trip: 50 cents/day x 240 days = \$120).

Option 2 – Ridesharing (Bus Transit)

Travel Allowance: Pockets difference between \$75 employee transportation allowance and monthly busfare of \$60: \$15/month x 12 months = \$180/year.

Vehicle Operating Costs: Reduce operation by 12,000 miles/year as result of not using vehicle for commute. 24 cents x 12,000 miles = \$2,880/year.

Time Saving: Using HOV lanes and bypassing tollbooth saves ten minutes each way, 20 minutes/day, or 80 hours/year x \$10/hour = \$800.

Smog Fee: Assume 8,000 non-commute miles. One cent x 8,000 miles = \$80.

Tolls: Assume miscellaneous 1,000 toll road miles. Five cents x 1,000 miles = \$50.

Projected Costs & Benefits

Extra Costs (drive alone)	
\$ 300	Parking fee
\$ 200	Smog fee
\$ 240	Higher bridge toll
\$ 120	Road toll
\$ 860	Total Costs
Extra Benefits	
None	

NET COST: \$860

Projected Costs & Benefits

Extra Costs	
\$ 80	Smog fee
\$ 50	Road tolls
\$ 130	Total Costs
Extra Benefits	
\$ 180	Employee travel allowance
\$2,880	Reduced vehicle costs
\$ 800	Value of time saved
\$3,860	Total Benefits

NET BENEFIT: \$3,730

Such extreme measures as rationing gas and vehicle ownership are also being considered.

Non-Recommended Measures

Driving Restrictions

Regulations to ration road space, vehicle ownership, or vehicle use are under consideration. It may be done through direct rationing: vehicles with odd-numbered license plates can be driven only on odd-numbered dates, even-numbered plates can drive on even-numbered dates; or each driver would be allowed only ten gallons of gas per week; or certain areas may be declared off-limits to cars.

Disadvantages

Cost-of-living goes up, attractiveness of living and doing business in the region goes down; the poor are hurt disproportionately by both. No revenues are created to improve options to driving, but considerable resources are spent on maintaining the burgeoning regulatory structure.

Air pollution might be reduced, but only if the political system is willing to ruthlessly enforce

harsh measures restricting personal freedom. But it probably will not. Instead, a complex patchwork of compromises, interpretations, and exemptions would grow up around the program, leading to much disagreement, finger-pointing, and litigation. The complexity and the acrimony may even be severe enough to give the quest for clean air a bad name.

Public acceptance of any such restrictive scheme would be extremely difficult to achieve.

Such mechanisms are likely to be highly detrimental to the economy. Businesses would have difficulty dealing with employee mobility and movement of goods and services. Dealing with the bureaucracy for enforcement and monitoring is likely to be expensive. The region's economy would become less attractive to existing or new businesses.

Driving Restrictions

Effects:

Air quality: Might work, if rigorously enforced, but probably unenforceable.

Economy: Damaging.

Mobility: Substantial deterioration.

Implementation: Very expensive.

Acceptability: Highly unacceptable, on grounds of freedom, equity and excessive bureaucracy.

What About Public Transit?

It is sometimes argued that if the money otherwise spent on roads were spent on transit instead, then good transit options would exist, and people would no longer need to drive. That may be true in the long-run, but only after the transit options are in place. Rail line extensions can take a decade or more; even providing new bus service is often far from instantaneous. Land use patterns that provide densities high enough to support transit at a reasonable cost will take many years to change, if they happen at all.

Even when frequent and responsive transit service is available, transit still must compete with the private automobile in terms of factors that are less tangible but still important: comfort, privacy, security, etc.

Transit can and should be improved. But it cannot be viewed as the only answer for everyone. Nor will improvements be immediate; transit services will improve gradually over time. In the meantime, as long as population and economic growth continue, some additional road capacity will probably be needed.

Blocking increases in road capacity attacks the symptoms, not the cause of transportation problems.

Capacity Restrictions

A less direct way to attempt to regulate driving is to restrict capacity improvements, especially by ceasing construction of road improvements. The theory is that the lack of capacity will cause such acute traffic congestion that many people will become frustrated and they will just stop driving. The corollary to the theory is that traffic congestion is actually a positive social value.

The main flaws in the theory are: (1) it ignores the major contribution of congestion itself to the air pollution problem; (2) has no effect on the underlying demand for capacity; (3) assumes that no other considerations, such as cost, time, convenience, freedom of choice and mobility, have any value; (4) provides no options for the driver.

The amount of time spent with a vehicle engine running is a major factor contributing to emissions. The more time a vehicle is stuck in traffic, the greater the emissions. Therefore, traffic congestion is counterproductive to clean air.

The main argument against expanding capacity is that it is "growth-inducing," and therefore the best way to halt growth is to halt road improvements. This view confuses causes and effects. The demand for new road capacity is caused by a series of fundamental factors: population growth, vehicles, licensed drivers, jobholders, two-earner families, disposable income, land use patterns, housing costs, lifestyle preference, etc. Without addressing the underlying factors, restriction of road capacity does not solve the problem.

Clearly, government land use decisions are a dominant factor in setting the volume and pattern of transportation demand. If preventing growth is the desired policy objective, the logical way to do it

Capacity Restrictions

Effects:

Air quality: Unproven value. Might make things worse.

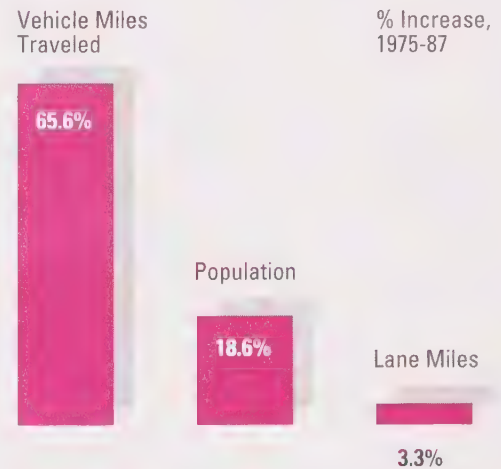
Economy: Worsen business climate.

Mobility: Definitely negative for goods movement, probably negative for people movement unless massive, simultaneous improvement in options.

Implementation: Easy. Just do nothing.

Acceptability: Will become increasingly unacceptable over time, as negative consequences become clear.

Traffic Growth Outstrips Growth in Highway Capacity



Source: Metropolitan Transportation Commission, 1989; California Statistical Abstract. (Data for Bay Area only)

is to change the decisions and the decision-making process that cause it – i.e., don't make land use decisions permitting more people, jobs, or commercial activity.

The deliberate strangulation of transportation arteries is not only illogical, it can be counterproductive. The Bay Area has experienced, in effect, a virtual moratorium in adding highway capacity (less than 1% growth per year) for most of the past two decades. Yet job and population growth have continued unabated in the region, except that growth controls (especially on housing and transportation capacity) have pushed growth out to the peripheries of the region. There is much evidence to suggest that the results of such policies include longer commutes, bigger traffic jams, worse air quality, and the loss of open space.

Capacity restrictions do not in themselves create travel options, nor do they create revenues to pay for those options. Drivers might seek alternatives to congested roads, but only if attractive options are available immediately. Until those alternatives are in place, trying to compel drivers to stay off the road as a result of deliberate restriction of capacity is doomed to failure.

Employer programs can help, but only if other changes are made to support commute alternatives.

Employer-Based Commute Programs

Employer-based commute programs constitute the heart of the transportation control measures plan recently adopted by Los Angeles. Such a mandate is under serious consideration by Bay Area agencies, and a number of local Bay Area jurisdictions have already adopted such ordinances. The Forum does not designate this as “recommended” or “non-recommended,” but views these programs as potentially positive – depending on how they are administered.

Such programs generally require employers to: (1) develop a program to change employee driving habits, and (2) report periodically on progress toward a numerical goal, usually expressed as a percentage using different travel modes or an average-vehicle-occupancy ratio.

The public agency must approve the employer’s plan. If it is deemed inadequate or is not making satisfactory progress toward the numerical goal, the agency can reject the plan and require implementation of more rigorous measures. In practice, this usually means the employer must spend more money or increase pressure on employees to change commute behavior. The punishment for employers can be severe; in Los Angeles, employers can be fined \$25,000 per day for non-compliance.

It has not been proven that such ordinances cause widespread and sustained change in travel behavior. Even the most committed employer finds it hard to change the “mode share” by more than a few percent, according to a 1989 report to the Metropolitan Transportation Commission. To our knowledge, there are no cases whatsoever of any geographical area in which anything close to the 1997 goal of a 35% reduction in total vehicle-miles or trips has been achieved.

Employer Programs

Effects:

Air quality: Marginal improvement, unless accompanied by major infrastructure improvements and public policy changes outside of employers’ control.

Economy: Could be expensive, depending upon how administered.

Mobility: Marginal improvement.

Implementation: High potential for bureaucracy.

Acceptability: Depends on how bureaucratic, how effective, how much mutual responsibility accepted by public sector.

Employers can do something, but they cannot do it alone. The employer-based strategy can hope to have, at best, only marginal results, unless it is accompanied simultaneously by massive improvements in the options to driving alone. But most of those improvements are *outside the power of the employer to control*. Indeed, they are the responsibility of the public sector. They include substantial infrastructure investments: rail lines, bus service, HOV lanes, park-and-ride lots. They also include changes in law, such as tax exemption of employer expenses on these programs and on employee travel allowances, different local parking requirements, and transit agency coordination.

Better Strategies for Employers

What would work: Selling transit tickets at the worksite, *if* there is convenient transit service available; extensive ridematching programs for carpools, *if* carpooling is a significant time-saver due to HOV lanes; flextime work schedules, *if* off-peak transit improves. Several of the Forum’s Secondary Recommended Measures – the employer travel allowance and parking charges – would fit especially well as components of an employer-based strategy, *if* federal and state income tax law are changed to support them.

Limitations

The planning, reporting, and promotional process can become a costly undertaking for employers. When the highly ambitious targets of a few years hence are not met (as is likely), employers will be squeezed harder to do more. The consequence could be substantial effort in exchange for relatively meager results, accompanied by increasing ill will between employers and employees and between business and government. If the cost and red-tape become too burdensome, this will be another discouraging factor for business to remain, expand, or locate in the region.

Commuting represents only a relatively small fraction of total trips – 26% of weekday trips and 20% of total trips. Thus, even the most successful employer-based programs would leave the vast majority of regional travel completely untouched.

Fairness dictates that polluters should pay, which is what the market-based approach proposes.

The Fairness Issue

Fairness is an important consideration when making public policy. There are several important dimensions of fairness raised by the market approach that deserve special attention.

Should the Polluter Pay?

The fundamental fairness issue is “who should pay?” If the source of pollution to be controlled is the motor vehicle, then the vehicle and its driver are the polluters. Our recommendations clearly link the source with the cost. For stationary pollution, the source (such as a factory with a smokestack) pays for the cleanup of its own pollution, and it cannot foist the costs on its non-polluting neighbors. Likewise, mobile pollution sources should pay their own way.

Payment can take many forms. The most apparent is paying cash directly out of one’s pocket for a specific product or service. But payment can also be exacted indirectly through higher taxes to support a regulatory mechanism, higher costs of goods and services, or inconvenience and wasted time.

A 1990 report by Californians for Better Transportation shows that traffic congestion now costs the average California driver about \$1200 each year, just in wasted gasoline and the value of wasted time. The average cost is expected to double or triple by the year 2000.

The problem with most indirect forms of payment is that there is little apparent connection between the polluter and the payment, and therefore little incentive to reduce one’s own individual pollution. Reliance on indirect costs means, in effect, that someone other than the polluter pays.

All proposals which break the link between who pollutes and who pays should be subjected to a high burden of proof to prove they are more “fair” in any sense than our recommended measures.

What About Low-Income Drivers?

One possible concern about some market-based measures is that they are too costly to the low-income driver. We too are concerned, and our plan has remedies for this.

The first crucial difference between our recommended measures and most regulatory schemes is that our measures generate revenues to remedy equity problems, while others do not. For example, the revenues raised by a smog fee can be used to offset the costs of low-income drivers through a tax credit or direct financial assistance to bring their vehicles up to code.

How It Would Work

A person with an income below some defined amount, who needs to commute by car, could be given a voucher for \$200, payable to the repair shop, which redeems its value from the government, or the low-income driver could receive a tax credit.

Revenues raised through a bridge toll could be used to pay for expanded bus service or lower bus fares over the bridge or for park-and-ride lots near the entrances. There are many possible variations on the theme. The point is that money paid by the polluter becomes available both for transportation options and to offset hardships on the low-income driver.

The second crucial difference is that measures which rely on regulation, while superficially treating everyone alike, often have a much worse but hidden effect on the low-income driver. If regulations add generally to the cost of living, they especially hurt those with low-income. The poor still pay the bill, probably a much higher one overall, but only pennies at a time, concealed in higher prices. If taxes are raised to pay for transit or other means to reduce air pollution, everyone pays, including those who don’t even own a vehicle. The relative responsibility for creating the pollution problem is totally disconnected from paying to solve it.

Any deterioration in the overall regional business climate can have a disproportionate effect on the low-income person. Jobs disappear and leave the region. Recent Bay Area experience demonstrates that it tends to be the lower-income jobs, not the executive jobs, that leave this high-cost region and end up in Sacramento, Texas, or Taiwan. Even within the region, the dispersion of jobs to the more distant suburbs, in part due to transportation problems, reduces opportunities for generally poorer central city residents.

In the guise of protecting low-income drivers from a pollution-related fee, the proponents of a regulatory approach may punish them with a higher cost-of-living and perhaps take away their jobs altogether.

What About the High-Income Driver?

The wealthy own more vehicles and drive more miles than the poor. Market-based measures relying on fees on vehicles, gas, or tolls mean the wealthy will pay more than the poor and certainly pay much more than they pay now.

Currently, the owner of two BMWs whose family drives 40,000 miles per year pays a maximum of between \$50 and \$300 per vehicle every two years to clean up the air (maximum required expenditure under the new smog inspection program). The owner of a Ford whose family drives only 8,000 miles per year also pays \$50 to \$300. Thus, the BMW family does five times as much damage to air quality and mobility as the Ford family. Yet the health of all is endangered equally by air pollution, and all are inconvenienced by congestion.

Our proposal makes those who drive the most pay the most to mitigate the damage done by their driving, especially on the most congested facilities at peak-hours. Under present circumstances, they do not pay for the damage caused to either air quality or to mobility.

Which Driving Is Affected?

Measures which affect only commuting but ignore the vast majority of travel, which is non-commute, raise a severe fairness issue as well as an effectiveness issue. Most of our recommended market-

based measures reduce pollution regardless of the purpose of the driving. Regulatory measures aimed only at working people place a disproportionate burden on this group.

Different treatment of different employers and employees raises another basic fairness issue. Employer-based mandates naturally concentrate on larger employers, as the logical way to deploy government's regulatory efforts. But it means that employees who happen to work for larger companies (only about half the total) are subjected to demands for change, while others who work for smaller employers, are self-employed, or do not have to work escape with no burden.

It can be argued that work-trips are among the least discretionary trips taken. Most people have to work for a living. On the other hand, much non-commute driving is somewhat discretionary and can be modified if there is an economic incentive to do so: e.g., instead of taking three separate trips to three different shopping centers, shopping might be better planned and combined into one trip.

Once again, our market-based measures, based on actual emissions or actual driving, tend to reduce the inequities among people in different work situations and place an appropriate burden on both work and non-work travel.

The Higher the Income, the More Vehicles Owned

Median Annual
Income

\$40,000

\$30,000

\$20,000

\$10,000

No Autos

1 Auto

2 Autos

3+ Autos

Automobile ownership by household

Source: 1980 Census;
Metropolitan Transportation
Commission

The Market Choice

The market-oriented approach – smog fees, tolls, transportation allowances, HOV lane networks, etc. – uses clear price signals to motivate individuals to reduce air polluting and traffic-congesting behavior. It preserves freedom of choice to a much greater degree than regulatory methods, and makes the driver/polluter pay in relationship to the burden placed on the system.

Relatively little bureaucracy is needed to maintain the market-based system, because positive changes are the consequence of millions of choices made by individuals every day. When individuals make a transportation choice that is beneficial to the community, they are rewarded, in terms of money or convenience; when they make a transportation choice detrimental to the community, they pay. The main results are: (1) polluting and traffic- congesting behavior is reduced substantially, and (2) revenues are generated to improve transportation options and to ease any undue impacts on those least able to afford them.

The market choice is the right choice for the Bay Area. The Bay Area Economic Forum urges the region's political leaders to choose this path and become a model for other regions around the nation.

The Bay Area Economic Forum is a public/private partnership of the Association of Bay Area Governments and the Bay Area Council. Composed of the highest levels of government, business, academic and civic leadership of the area, the Forum is a permanent body addressing economic issues of the San Francisco Bay Region – a metropolitan area of nine counties and six million people.

Its members are committed to actions fulfilling the economic potential of the region while maintaining its unique and valued quality of life.

Chairman: **Robert T. Parry**
President & CEO
Federal Reserve Bank
of San Francisco

Executive Director: **Michael S. McGill**

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